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THE AMERICAN ENGINEER

MARCH, 1935

PUBLISHED BY

THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

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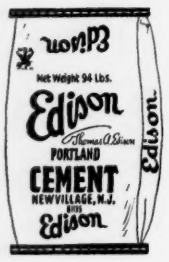

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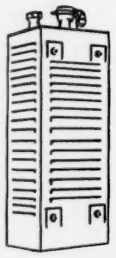

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THE AMERICAN ENGINEER

Published monthly in the interest of the American People and the Engineering Profession
by the National Society of Professional Engineers

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419—City Hall, Portland, Ore.
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PUBLISHING AND DISTRIBUTING OFFICES—*Scott Printing Company*
One Sherman Avenue, Jersey City, N. J.
Telephone—Webster 4-3420-1

EDITORIAL AND GENERAL OFFICES
2952 Grand Central Terminal, New York, N. Y.
Telephone—VAnderbilt 3-9152

VOLUME 1 | MARCH, 1935 | No. 3

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The American Engineer assumes no responsibility for statements or opinions expressed by contributors whose names identify the source of the same.

Subscription Rates

$1.00 a year, in advance, to members of the National Society of Professional Engineers and its affiliated Societies.
$2.00 a year, in advance, to non-members. Single copies, $0.25.

Entered as second-class matter January 29, 1935, at the post office at Jersey City, New Jersey, under the act of March 3, 1879.

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The American Engineer offers apologies for errors of February issue. Especially on page 5—$5,000,000 should be $5,000,000,000 and page 6—title—Indispensible—should be Indispensable.

A NEW ENGINEERING DEAL

THE NATIONAL SOCIETY OBJECTIVES

CALL FOR NEW COURSES OF ACTION

TO DATE nine States have joined the confederation which seeks, with the aid of the National Society of Professional Engineers, to focus public attention upon the value and contribution of engineering thought to the welfare of human society. This objective is not unmindful of the need for alleviating the unfortunate plight of the members of the profession which is so largely responsible for modern civilization. Rather is it predicated upon the premises that in bringing to the forum of public opinion the association between engineering and commercial existence the cause will be recognized as inseparable from the effect.

Comparison between the organized activities of Engineers and members of other professions, such as law and medicine, suggests the reasons for the ineffectiveness of the former. Lack of interest in the humanities, smug complacence in a circumscribed sphere of self-aggrandizement, and, above all, failure to manifest concern for, and participate in, the affairs of community, state and nation as organized units of society, are manifest distinctions between the engineer and the lawyer and doctor as citizens.

The engineer is, first of all, a citizen and secondly a member of a calling. Society comprises many avocations and concern for the former is the first duty of every man. Notwithstanding the indisputability of this contention, it is discouraging to find the number of engineers who object to social or political activities upon the part of professional societies. To such the term political is synonymous with partisan fealty. They are either ignorant or thoughtless of the true definition of the word political.

The National Society is socially, economically and politically, as well as professionally minded. It is interested in sociology, political economy and government as a means toward the end of promoting human welfare and believes that it is in public recognition and application of engineering processes of thought that the salvation of the integrated mechanical society of the moment can best be accomplished.

The civilization of to-day created by engineers, administered by others, has created a paradox. A surplus of the needs and comforts of life, and a lack of the same by all the peoples of the earth is a condition that cries out for change. The problem, which is purely one of distribution, cannot be solved by any but engineers. The future direction of human society, at least until another epoch shall have supplanted him in the order of necessity, is not alone the opportunity of the engineer,—it is his duty to his God, his country and his family.

The aims of the National Society cannot be accomplished by adhering to long-established provincial practices of technical societies. The State Societies and County Chapters must pattern their activities after those of state and county bar and medical groups. Consideration of technical subjects, discussion of engineering science and establishment of classes or grades of engineers do not promote professional recognition of engineers by communities and states and should be proscribed, except in rural areas, where no technical societies exist. Preparation of programs for communal welfare, participation in civic affairs, inauguration of engineering projects as a means of promoting the public good, creation and enforcement of laws regulating the practice of engineering, determination of qualifications for admission to practice, and the establishment of, and adherence to, codes of ethics and practice,—such as the functions of professional state and county affiliates of the National Society. Association and co-operation with a Chamber of Commerce is far more beneficial to the public welfare and the recognition of Engineers than joint sessions and discussions with other engineering societies.

To serve his country, his profession and himself in the manner envisioned by the National Society, the engineer must divorce himself from the customary methods of engineering societies.

Like Society, which is confronted with the eternal problem of reconciling an ever-changing civilization with an unchanging human nature, the National Society is faced with the difficult task of planting and nurturing the seed of social obligation and opportunity in a soil impregnated with technical provincialism.

In the conviction that there is to-day within the profession a predominance of imaginative pliable minds lies the justification for the National Society. It is to such engineers the Society looks for support. As for the never-learn, never-forget type—there is occasion neither for concern nor for hope. Time alone is the element which separates the ultimate from the present. Laissez faire must eventually give way under the weight of members conscious of changing concepts.

VENI-VIDI-VICI

Remarkable Success Attends President Steinman

Perry T. Ford Aids in Spreading Doctrine

IF there is any doubt as to whether engineering possesses one who can lead the profession out of a morass of misfortune and neglect (born of provincial immolation) into its rightful place in the sun of human affairs, let the skeptic read the report which is appended herewith. This report, in the form of a diary, impressive for its brevity, style and completeness is reproduced exactly as was transmitted piecemeal during a hectic but most successful trip.

The zeal, the ability and the uncalled-for sacrifice of finances, time and even health, displayed over a period of many years by President D. B. Steinman of the National Society of Professional Engineers, find no parallel in the annals of engineering, and his position of leadership in the profession is undisputed. Only die hards of the old order in the engineering world remain blind to the fact that here is inspiration and capacity that could well be utilized in the solution of the social problems which confront the nation.

The American Engineer conveys the appreciation of the National Society in acknowledging the efforts of President Steinman and Chairman Ford of the Membership Committee. In the space of less than six months, nine major states of the country have affiliated with the New Deal in the engineering profession,—a deal which seeks to preserve for existing societies all that was good in the old order whilst promoting the welfare of the nation and the profession through the medium of social endeavors.

"Louisville, Ky.,
February 3, 1935.

Diary of D. B. Steinman

Sat., Jan. 26—Spoke at luncheon meeting of the Huntington Chapter, West Virginia Society of Professional Engineers—H. A. Levering, President of Chapter.

Sun., Jan. 27—Traveling 12 hours (two trains and a bus) to Morgantown, West Virginia. Arrived after midnight.

Mon., Jan. 28—Annual Meeting of West Virginia Society of Professional Engineers at University of West Virginia—Attendance 100—Addresses by D. B. Steinman and Perry T. Ford (Chairman of National Membership Committee) on National Society of Professional Engineers—Discussion.

Tues., Jan. 29—West Virginia Society of Professional Engineers passed Resolutions recording sentiment in favor of affiliating with the National Society of Professional Engineers and directing preparation and submission of the necessary amendments to the West Virginia Society constitution and by-laws. West Virginia Society members to be enrolled in the meantime in National Society of Professional Engineers.

Drove with Perry Ford to Youngstown, Ohio, to attend organization meeting of Mahoning Valley Chapter of Professional Engineers (3 counties)—Attendance 100—Splendid enthusiasm.—D. B. Steinman and Perry Ford spoke on the Professional Engineer organization movement.—Gale Dixon elected President. —Similar chapters being formed throughout Ohio.

At organization meeting of the Mahoning Valley Chapter of Professional Engineers at Youngstown, Ohio, it was announced that Trumbull County Chapter, A.A.E. (C. R. Bricker, President) will disband and will turn over its qualified members (15) and its funds ($85) to National Society of Professional Engineers to be credited toward dues in county, state and national units.

Wed., Jan. 30—Drove with Perry Ford through Ohio.—At Canton had luncheon conference with Wade Shidler, incoming President of Ohio Engineering Society.—He is calling immediate organization meeting of local County Chapter of Professional Engineers. —Reached Columbus in evening.—Telephone call from legislator informed Ford that bill had just been introduced to exempt insurance companies from Professional Engineers registration law. Perry Ford started burning the wires to get this bill stopped or withdrawn.

Thurs., Jan. 31—At Columbus, Ohio—Attended regular meeting of the Ohio State Board of Examiners for Professional Engineers. This State Board is on its toes.—Not only handling 4,000 applications conscientiously, but also following and planning all state legislation affecting Engineers, and taking the leadership in organizing the Professional Engineers of the State.—Also attended conference of legislative committee of Ohio Engineering Society including the Board of Examiners, formulating policies and recommendations on pending county charter revisions affecting County Engineers and Surveyors.

Fri., Feb. 1—Attended 50th Annual Meeting of the Illinois Society of Engineers at East St. Louis.—Attendance 200—D. B. Steinman spoke on National Society of Professional Engineers. — Enthusiastic response.—Full cooperation promised by officers and members.—Prof. H. E. Babbitt, Secretary,—New President: Prof. G. W. Pickels.

Sat., Feb. 2—Annual meeting of Illinois Society continued.—Conferences with officers and legislative committee on desired new registration law. Splendid cooperation from Hon. A. W. Kaindl, member of Illinois Legislature.—Hon. De Witt Billman, Secretary, Illinois Legislative Reference Bureau of the State Legislature has ruled that the Model Registration Law for Professional Engineers would be unconstitutional in Illinois.—As a compromise to save two or more years delay, a bill has been drafted and introduced to register Civil Engineers.—This will be an improvement over the present law registering Structural Engineers only.

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STATUS OF ENGINEERING

Advancement of the Profession Calls for Increased Public Activity

By GEORGE M. GRIFFITH

ENGINEERING has been defined as the science of controlling the forces and of utilizing the materials of nature for the benefit of man and the art of organizing and of directing human activities in connection therewith. The actual practice of Engineering, as defined, has been carried on since ancient days, as evidenced by the construction 30 centuries ago of the Grand Canal of China, 700 miles in length and having 75 locks.

Yet engineering is one of the youngest professions. Theology, law and medicine were originally known as "the professions," and their practice was at first confined to the priests. They were the lawgivers. They practiced the art of healing and as the science of building developed they became the architects. We, of today, therefore are the heirs of countless thousands of men who, throughout the ages, have devoted themselves to the task of making the world a better place in which to live.

The engineers of pioneer days in America were no doubt hampered in their development by an occupation which was largely nomadic and solitary. While the practice of the professions of law and medicine afforded their members an opportunity for social intercourse the early Engineer had little opportunity to satisfy his desires for social life. History, therefore, records few of these men who attained prominence in public affairs.

Such is no longer the case for now it is impossible to think of any phase of human life that has not been touched by the Engineer. Throughout the past, and particularly, during the last three decades the profession has so developed improved means of transportation, communication and production that prior to November, 1929, we felt that we had entered upon an era of everlasting prosperity. This period of development is largely the result of the profession having clearly demonstrated the many useful things it could do and because its members more fully realized their individual obligations to society as a whole.

Nevertheless, it must be remembered that the members of the profession who were active during this period of rapid development were also pioneers and it was therefore inevitable that when the economic crash of 1929 came their activities were among the first to be curtailed or completely abandoned, with the result that widespread unemployment existed within their ranks. Such a period of readjustment, however, has its merits for history teaches us that the pioneer must, at intervals, pause to permit those who follow to catch up. It is during such a period that the fearless pioneer devotes himself to the task of consolidating the gains previously made. Whether we realize it or not this is precisely what we have been doing, with the result that on every hand are evidences of popular esteem. Calls for the Engineer, as the field of his work is broadened, continue to come in ever-increasing numbers because of his trained and accurate judgment and capacity for study, investigation and solution of current problems. And so it is that today we find the Engineer engaged not only in his usual fields of endeavor, but on every front of the recovery effort for economic and social security.

Roger Babson has said that the fundamentals of prosperity are based on faith, integrity, industry and brotherly kindness, all of which are spiritual qualities. Is it not significant that the Code of Ethics of this organization is based on these same qualities?

Babson has also said that the present economic situation is not fundamentally a period of business depression, but rather a period of spiritual depression. A period when men have lost faith, forgot integrity, loathed industry and despised brotherly kindness. Mr. Babson substantiates these statements with statistics for the past fifty years of membership in churches. When the curve of membership declines, he says a period of business depression is indicated. When the curve begins to rise it is an indication that we are again approaching stable business conditions.

Since Mr. Babson's analysis cannot be doubted, perhaps we should not express surprise at finding, during such a period, examples of engineers who "act for their clients in professional matters otherwise than as a faithful agent or trustee, or accept remuneration other than their stated charges for services rendered,"

Or Engineers who "attempt to injure falsely or maliciously, directly or indirectly, the professional reputation, prospects, or business of other Engineers,"

Or Engineers who "attempt to supplant another Engineer after definite steps have been taken toward his employment or while he is still employed,"

Or Engineers who "compete with other Engineers for employment on the basis of professional charges by reducing their usual charges and in this manner attempt to underbid after being informed of the charges named by others,"

Or Engineers who "review the work of other Engineers for the same client without the knowledge or consent of such engineers, or unless the connection of such Engineers with the work has been terminated,"

Or Engineers who "advertise in self-laudatory language or in any other manner derogatory to the dignity of the Profession."

Since we do know that we find such examples during these periods, is it not the duty of the professional society to call to the attention of all members of the profession within their jurisdiction the necessity of reconsecration of individual members to these principles upon which the Profession is founded? At a

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REVEILLE

A CALL TO ENGINEERS

Leadership an Obligation

By ROBERT J. EAGAR

IN a recent editorial the New York Times deplored the lack of social and spiritual advancement in contemporary world affairs. The writer pointed out that with the spread of scientific and engineering knowledge the world had taken on new hope. Mankind trusted that the improvement in communication, the rapidity of transit and the spread of ideas and education through the medium of the movies would bind people closer together. They have trusted in vain. Their hopefulness has turned to despair. The closing words of this interesting editorial are as follows:

"Scientist and engineers may give us the mechanism of international understanding, but society has not yet invented the method of utilizing that mechanism for its own spiritual advancement. Perhaps the reason is to be found in the backward state of civilization. Despite all our machines and our ways of disseminating information over the planet, there is still something of the savage in us. Our caves have simply become skyscrapers."

The truth of this editorial is very apparent. The world to-day instead of moving forward towards safety and peace, is steadily going backward. We live in a series of armed camps. Our relations with our neighbors consist in a very tenuous array of agreements and treaties but behind them is mutual hate, racial prejudice and a constant and enduring competition in armament. We advance with incredible speed and breathtaking celerity along scientific and engineering lines only to stagnate and decay spiritually, socially and politically. Whether or not the reason for this condition is as stated above would be difficult for us to determine. We can and must, however, do our part to end it. It is the engineer's opportunity and he must grasp it.

He must take his rightful place in the civic, political and social life of the community. He must control and direct, for the public good, the marvels of science which he has produced.

Heretofore, the public have considered the Engineer as a builder, as a practical man, nay, even as a gross materialist. They have not looked to him for spiritual leadership. This is as unfortunate as it is untrue. The mind that can search the depths of the heavens, chart the skies, control the resources of the earth and penetrate the dark unfathomed caves of the ocean, is no material mind. It should and does react to the highest idealism.

The Engineer is preeminently the thinker. When he builds he is simply giving his thoughts concrete form. The thoughts come first. He has builded a world and the world knows him not. Therein lies his fault. He has been content to stay within his laboratory to be a recluse and permit lesser minds to take the lead in our every changing and tumultuous life. He has neglected to organize and order his startling processes and to control their uses and effects on civilization.

When the Engineer, equipped as he is, with deep knowledge, a high idealism and an unselfish desire for the public good, shall realize his responsibility to mankind and go forth and preach his gospel, the world will be a better place to live in.

In the United States there is a particular need at this time for a clear and wholesome leadership. The problems of the day are so complexed that the average man is seeking ardently for someone who can show him the way to understand and solve them.

Today, as never before, men of vision, energy and individuality are needed to direct the people as they face one of the most awful depressions that mankind has ever been called upon to attack.

In looking over the leaders of the various civic associations and in investigating the professional complexion of the members of our legislative bodies, Municipal, State and Federal, it will be noticed that there are very few Engineers. This is a condition which should never have arisen and which should be remedied as quickly as possible. Legislatures should be such as to accurately mirror the ideas and the wishes of all the people. If one large body is under-represented, it tends to unbalance the entire system.

The blame for this condition lies entirely with the Engineer. He must bend every effort to correct it and see that in the future he will assume his rightful place in Civic and Legislative life. Singly, he can do very little, but, with a united front great and lasting good can be accomplished. It will be necessary for the great engineering profession, as a whole, to aid the individual to the purpose that they may both go forward to a greater public service. When this happens, as it surely will, leaders shall arise from our Profession who will lead not only ourselves but all the people.

It has been said that a leader must know the way, show the way and go the way. Surely the Engineer has amply proven that he knows the way. He must arouse himself to go the way and his highest duty to his fellow man is to show the way.

To hesitate at this crucial time means definite failure and chaos. To go forth fearlessly and sincerely means the dawn of a new era with the goal—ultimate human happiness.

ENGINEERS AND CITIZENSHIP

Lack of Interest in Social Problems A Deterrent to Public Recognition

By CLAUD C. COYKENDALL

THE present economic situation is so unusual, and is affecting Engineers and the work of Engineers in so many ways, that any consideration of the present status of engineers or of the engineering profession must take this economic situation into account. It is a situation in the making of which the engineer has had his full part, and for which he must assume his full share of responsibility.

Never in the history of the world has there been just such a social and economic condition as we are now experiencing in this country. We are possessed of all of the material things essential for a happy, contented and prosperous existence.

First, we have a democratic form of government and select our own leadership, both for formulating and for administering the laws by which we are governed. We are neither oppressed nor down-trodden. We are not saddled with any royalty, or other traditional riffraff that is a drain upon our resources or a damper upon our initiative. We have no governmental agencies, save only our supreme courts, the personnel of which cannot be completely changed in the next biennium, if we so wish. Consequently, we cannot ascribe our present distressful situation to our form of government unless we are willing to admit that we are incapable of self-government.

Second, we are blessed with an abundance of natural resources. Few indeed are the essential commodities necessary for our material well-being not found or produced in abundance within the confines of our own country. And for those few things considered necessary for our modern way of living, which we do import (coffee, tea, rubber, tin, Scotch whiskey, pilsener beer, etc.) we have an abundant surplus of commodities desired by the countries which supply us with the things we import. No, we cannot ascribe our present situation to a poverty of natural resources.

Third, we have man power in abundance. By man power I mean men in all the walks of life, from the uneducated, unskilled common laborer up through the ranks to the inventors and scientists. No country in the world's history was ever possessed of such a wealth of human material, each one willing and able to do his share of the day's work.

Fourth, we have plenty of working capital. The foremost problem of banks, insurance companies and other institutions handling our accumulated capital savings is to find employment for these savings. The unemployment problem among dollars is almost as serious as among people, and the earning power of the employed dollar is the lowest in our experience.

What, then, is lacking? With government of our own making, manned by officials of our own choosing, natural resources in abundance, man power of the highest order, and ample working capital for the further development, production and distribution of these natural resources, why the depression? Is it on account of the world-wide situation? True, our allies in the World War are not paying their debts. Russia is floundering around in the midst of a grotesque social, political and economic experiment. Other European countries are experiencing social and economic difficulties, Japan is making disturbing and disconcerting gestures in the Orient. China and India, as for centuries past, are teeming with under-fed and underprivileged millions. But we must rely on foreign trade for only a small percentage of things essential to our comfort. Why, then, should the foreign situation so disturb us?

Perhaps our debts, public and private, furnish the explanation of our trouble. If so, the course we are pursuing nationally is not reassuring. If it were possible to restore individual incomes to the level that existed when most of these debts were created, however, the debt load could easily be borne. Our national debt is but a fraction of one year's national income. Who of us, as individuals, would admit our case hopeless under such conditions?

Maybe we are fundamentally in error in trying to maintain the standard of living we have been accustomed to. Our economists say not. Our economists assure us that with our modern methods and machinery, each individual is capable of producing wealth in an amount that would support a standard of living far in excess of anything we have ever experienced. If that be the case, the fault then must be in the system that has been developed for the distribution of wealth. Perhaps capital has exacted more than its fair share of created wealth, considering the value of the service it has performed. Perhaps the $10,000 per month salary which the Railroad President has been paid is out of proportion to the $80 per month salary of the section laborer or shipping clerk, considering the value of the service performed.

But, you ask, and fairly so, what has all this economic or socialistic chatter to do with the status, recognition and advancement of the Engineer? In turn, permit me to inquire, what has the Engineer done about it, or what does he propose to do about it? The Engineer must realize, if he bothers to think at all, that he is among the first affected by an economic disturbance. His employment, normally, is dependent on an extension or improvement of existing facilities, and extensions or improvements are the first things we quit spending money for when hard times arrive. Yet, up to and including now, the Engineer has apparently given little thought to social, political and economic trends or consequences, though vitally affected by them. In private employment, the Engineer has been happy to do

(*Continued on page* 25)

EXAMINATION FOR QUALIFICATION

REQUIREMENTS OF THE STATE OF NEW YORK

January 28th - 31st, 1935

As an item of interest to Engineers generally, and especially to those in States other than New York, the questions propounded at the last examination held in that state are appended herewith.

THE UNIVERSITY OF THE STATE OF NEW YORK
Examination for Professional Engineers
ENGINEERING MATHEMATICS
Monday, January 28, 1935—9.15 a.m. to 12.15 p.m., only.

Answer any eight of the following questions but no more. If more than eight questions are answered, only the first eight will be considered. Slide rule and any reference books may be used. Return these questions with your answer papers.

1 Find the equations of the tangent and of the normal at the point (4, 4) of the hyperbola $16x^2 - 9y^2 = 112$; find also the lengths of the subtangent and the subnormal.

2 The circumference of the base of a dome in the shape of a hemisphere is 66 feet; how many square feet of lead are required to cover it?

3 Insert *five* arithmetic means between 3 and — 5.

4 Find the area bounded by the parabolas $y^2 = 4ax$ and $x^2 = 4ay$

5 The lengths of two sides of a triangle are $\sqrt{2}$ and $\sqrt{3}$ and the angle between them is 45° ; find the remaining side.

6 A county owes $60,000. What sum must be set apart annually as a sinking fund to cancel the debt in 10 years, provided money is worth 6% ?

7 Prove the following trigonometrically:

$$\sin 75° = \frac{\sqrt{3}+1}{2\sqrt{2}}$$

8 The span (chord) of a bridge in the form of a circular arc is 120 feet and the highest point of the arch is 15 feet above the piers. Find the radius of the arc.

9-10 The radius of a circular piece of paper is r. Find the length of the arc of the sector that must be cut from the circular piece of paper so that the remaining sector will form the convex surface of a cone of maximum volume.

11 Expand the following to *five* terms: $(x^{2}/_{3} - 2y)^{5}/_{2}$

12 Express in radians the following angles: 10°, 30°, 75°, 105°, 160°.

THE UNIVERSITY OF THE STATE OF NEW YORK
Examination for Professional Engineers
APPLIED SCIENCES
Monday, January 28, 1935—1.15 to 4.15 p. m., only.

Answer any eight of the following questions but no more. If more than eight questions are answered, only the first eight will be considered. Slide rule and any reference books may be used. Return these questions with your answer papers.

1 What advantage has alternating current over direct current for power?

2 A body starts sliding down a plane 30 feet long inclined at an angle of 30° with the horizontal. Neglecting friction, calculate (*a*) how long it will take the body to reach the foot of the slide, (*b*) how fast the body will be travelling when it reaches the foot of the slide.

3 In a hydroelectric plant operating under a 50-foot head, how much water is required to produce 1000 kilowatts if the over-all efficiency is 75%?

4 Explain or define *five* of the following: counter emf, water hammer, hydraulic jump, ballistics, fuse, erg, electrolyte, manometer, two-cycle engine, latent heat.

5 A timber 12 inches square and 16 feet long is weighted at one end with steel to make it float in a vertical position. How many pounds of steel are required so that only 3 feet of timber will show above the surface? [Assume weight of timber at 40 pounds per cubic foot.]

6 A waterfall is 160 feet high. If all the potential energy is dissipated in heat, how many degrees is the water heated by the fall?

7 Name *three* types of sources of water supply and outline briefly the method of collecting the water in each case.

8 A steel tape is ¼ inch wide and $\frac{1}{32}$ inch thick. How much extra pull is required to keep the length unchanged if the temperature has dropped 10° F.?

9 What geologic conditions are required to produce a swamp?

10 Describe briefly *two* ways in which hydrogen may be produced.

11 An automobile is going around an unbanked curve of 100-foot radius at a speed of 30 miles per hour. What is the minimum coefficient of friction required between the tires and the pavement to prevent skidding?

12 A rectangular water gate occupies a vertical position and is 4 feet wide by 6 feet high. It is hinged at the top edge. If the water surface is 5 feet above the hinge, what force applied at the bottom edge is required to keep the gate closed?

THE UNIVERSITY OF THE STATE OF NEW YORK
Examination for Professional Engineers
STRUCTURAL PLANNING AND DESIGN
Tuesday, January 29, 1935—9.15 a.m. to 12.15 p.m., only.

Answer any eight of the following questions but no more. If more than eight questions are answered, only the first eight will be considered. Slide rule and any reference books may be used. Return these questions with your answer paper.

1 Describe briefly the characteristics of lime, natural cement and Portland cement with regard to composition, manufacture and setting.

(*Continued on page* 21)

NATIONAL SOCIETY DIRECTORS

HOLD MEETING IN NEW YORK

IMPORTANT: Headquarters to be located in Washington
Date—Between April 15th and June 1st.—Details in April Issue

THE Board of Directors of the National Society of Professional Engineers met in New York on March 15th, with President Steinman and T. Keith Legaré as Chairman and Secretary, respectively.

Dr. Steinman reported on the growth of the Society, which now numbers nine member states, and outlined a program of action for the purpose of effecting the objectives envisioned.

Secretary Legaré reported on membership, indicating that a statement as of March 15th would probably show 1,000 engineers as paid up for 1935. The States' rosters indicate a membership of 4,215.

The question of accepting membership from qualified Engineers who are not members of the State Societies, where such are recognized, was declared contrary to constitutional provision and the Secretary instructed not to accept dues from such persons.

An outline of activity for the Professional Relations Committee was set forth in the following communication which is being forwarded to all members of the Committee by Dean P. H. Daggett, its Chairman:

"I am pleased to know that you have accepted membership on the Professional Relations Committee of the National Society of Professional Engineers, and I am writing to outline how our Committee can best function in order to advance the objectives of our national organization.

Please re-read the list of "Duties of the Professional Relations Committee" as previously submitted to you and subsequently published on Pages 10 and 18 of the American Engineer for January.

In order that we may have different members of our Committee concentrating on the different objectives assigned to us, I propose that we subdivide our Professional Relations Committee into the following respective sub-committees:

1. Fees for Engineering Services.
2. Salaries for Employed Engineers.
3. Ethics and Professional Practice.
4. Methods of Engaging Engineering Services.
5. Engineering Education.
6. Relations With Other Professions.
7. Relations With Other Organizations.
8. Relations With Engineering Assistants (Juniors).

I want you to choose one of these special committees on which you will prefer to work, either as chairman or member. Please reply promptly, letting me know your selection and whether you will accept the Chairmanship of the sub-committee, so that I may promptly confirm the assignments and make the announcements. Additional members may be added to each sub-committee if deemed desirable."

Over the signature of Prof. J. S. Dodds, Chairman of the Public Relations Committee, an appeal for activity is being forwarded to the said Committee. Excerpts therefrom are:

* * * *

"The primary function of the Committee is *Publicity*—publicity for the engineering profession. We are really a Publicity Committee, although we use for our title, the phrase "Public Relations" which is the usual preferred designation for the same activity.

In the Duties of the Public Relations Committee, previously submitted to you, and subsequently published on page 18 of the American Engineer for January, the first and leading item is :

"1. To conduct a planned publicity campaign, with periodical releases to newspapers and magazines, on behalf of the Engineering Profession."

* * * *

The thoughts and ideas that we want to get across in our publicity campaign are suggested in the remaining items of the published list of duties of our Committee, such as:

"2. To inform the public on the high qualifications of the Engineer, the importance of his services to human progress, the requirements of registration, proper methods of selecting engineering services, and the desirability of appointing Engineers in public councils and in high executive and administrative positions."

Please re-read the full list of Duties of the Public Relations Committee for additional suggestions.

* * * *

Some ingenuity has to be exercised in creating or even inventing new situations. Conventions or meetings can be used effectively as occasions for reporting resolutions, announcements, or excerpts from addresses. If no regular meeting is available, a meeting of trustees, directors or executive committee can be created and utilized; or use can be made of letters or public officials.

There are two things I want each member of our Committee to do:

1. Prepare and place publicity items, along the lines indicated in the newspapers of your state. Try to get one such item across each week.

2. Help me by using resourcefulness and publicity ability in drafting suitable publicity stories for release on a national scale.

* * * *

This is the program of our Committee: Local publicity releases weekly by each member of the Committee, and national publicity releases monthly by the Committee."

(*Continued on page* 25)

ITEMS OF GENERAL INTEREST

NEWS, REPORTS, COMMENTS

NATIONAL SOCIETY ACTIVITIES

Correspondents and readers are invited to submit for publication items of interest to the professional Engineer of the country. Such material must reach the Editor prior to the twentieth day of each month.

A PRESIDENTIAL APPEAL

Action Is Called For

With the organization of the National Society already advanced well beyond the program expectation, the time for the prosecution of activities and aims needs must proceed if the goal of the New Deal in Engineering is to be achieved.

Legislation has been sponsored in a number of states and the field of opportunity will shortly be materially enlarged. A survey of conditions suggests the formulation of a definite plan of action upon the part of the National Society and its associated state organizations.

In order to develop a program which can be prosecuted with vigor President Steinman has appealed to the officers, directors and standing committees for immediate submission of proposals.

The following communication calls for action. All persons to whom it has been addressed are expected to act at once. All Engineers are invited to submit recommendations to the American Engineer.

I feel that there should be at least one communication each month from the Committee Chairman to the members of his committee. If you will prepare such communications, Mr. Legaré will be glad to send it out to the members of your committee.

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS
Office of the President
117 Liberty Street
New York

February 19, 1935.

To Chairmen of National Committees:
Messrs. Chapman
Dodds
Daggett
Ford
Sheridan

Gentlemen:

We now have nine Member State Societies in the National Society, with an aggregate enrolled membership exceeding four thousand. All of this effort is wasted unless the National Society proceeds to record definite accomplishments on behalf of the engineering profession. We are dependent upon the initiative and enthusiastic effort of the national committees under your chairmanship to make our program successful.

You have all received copies of the lists of duties of your respective committees, and you will also find these programs published in the January issue of The American Engineer. Please go over these programs carefully and select one or more items for immediate activity. I shall be glad to assist in any campaign and so will our National Secretary, Mr. Legaré. He is prepared to

(*Continued on page* 24)

WHAT PROMPTS?

Whence Comes Misinformation?

Evidently there are abroad attempts to immunize the importance of State laws regulating the practice of professional engineering.

The following letter from President Steinman was required to correct what was either ignorance or malicious intent to injure the professional status of the Engineer:

February 26, 1935.

Mr. Alfred Z. Reed,
The Carnegie Foundation
for the Advancement of Teaching,
522 Fifth Ave., New York City.

Dear Mr. Reed:

I have your letter of February 20th with advance proof copy of your "Annual Review of Legal Education." I have read with keen interest your chapter on "Varying Institutional Development of Medicine, Law, Engineering, and Architecture." Responding to your invitation for comments or critical suggestions, I submit the following:

The paragraph near the top of page 23 does not present an adequate or clear picture of the present organization of the engineering profession. The National Society of Professional Engineers, although but recently organized, is already going strong and is rapidly taking a position of professional leadership. It approaches most closely to the American Medical Association as a national organization constituted by the integration of state and local societies, with membership restricted to those legally admitted to practice. In order to make your presentation clearer and more adequate, I would therefore suggest that you add the following statement after line 16 on page 23:

"The National Society of Professional Engineers is the first and only national organization in which membership is composed exclusively of legally registered Engineers; it is a federation of State Societies of Professional Engineers, cooperates closely with the National Council of State Boards of Engineering Examiners and individual State Boards, and is the most active sponsor of the extension and strengthening of State laws for licensure of engineers."

Near the bottom of page 24 occurs the sentence: "Moreover, even though the state registration or licensing boards are of relatively little importance, it is a matter of some practical inconvenience that in most States the prospective Engineer encounters several independent sets of educational standards." On behalf of the National Council of State Boards of Engineering Examiners and the National Society of Professional Engineers, I have to record distinct exception to the introductory clause of this

(*Continued on page* 24)

ENGINEERS' PLIGHT

Applies to Age and Youth

In common with his fellow citizens of mature years, the Engineer who has passed his fiftieth birthday has during this industrial age of exploitation found it increasingly difficult to secure employment, aside from the recent relief dole assignment during the years since the beginning of the present century. He who in his youth aided so greatly in developing this mechanical civilization finds himself a petitioner at the door of an industrialism which finds him no longer worthy of its consideration. This is modern civilization.

In keeping with the craze for efficiency the self same society demands the impossible of youth. It must have experience. Perhaps some believe this experience can be acquired through inheritance. Some industrialists even act as though men should be born with it.

In this present unhappy state of affairs the plight of both age and youth is exaggerated by the plentitude of trained experienced Engineers who come between the deadly line of maturity and the scratch line of inexperience.

The following appeal, directed to President Steinman of the National Society, calls for comment.

"My dear Dr. Steinman:

I was present, last night, at the meeting of the metropolitan section of the American Society of Civil Engineers. You, sir, and the things that you said, led me to believe that it would not be amiss to ask you for advice and suggestion. I crave your indulgence to the presentation of my particular problem as an unemployed recent graduate. I know that it is typical of that of a great percentage of young men just out of college. I ask you, as an Engineer in direct contact with the men and problems of civil engineering, 'What is to be done?'

Private industry will not employ the unexperienced college graduate; there are too many Engineers of vast experience unemployed, and willing to work for whatever salary is offered. It is, as far as I have been able to determine, impossible to obtain an appointment to governmental work (municipal, state or federal) unless one is receiving home relief. Sir, I am not as yet destitute and I don't want a monetary dole, but with conditions as they are at present it is vitally necessary that I assist my family financially. I am only too eager to work, but, I fear, the job outlook is very dark.

This problem, as I have outlined it, is typical of that of all the members of my class that I have come in contact with. This is our plight, sir, what encouragement can you suggest as a way

(*Continued on page* 24)

STATE ACTIVITIES ENCOURAGING

REPORTS THROUGHOUT COUNTRY INDICATE INCREASED INTEREST

The American Engineer acknowledges the contributions of correspondents and intends, as soon as the organization of its editorial staff is completed, to make proper announcements.

Correspondents are urged to forward news items in time for the same to reach the Editor before the twentieth of each month.

FLORIDA

Treasurer Conlon—Missionary

From Willard T. Conlon, Treasurer of the National Society, who is visiting Florida and other parts of the South in the interest of the New Deal in Engineering, comes encouraging news.

Prominent Engineers in Miami, Fort Lauderdale, Tarares, Ocala, Gainesville, Orlando, Sanford and Jacksonville have indicated approval of affiliating Florida with the National Society and will aid in accomplishing the desired objective.

There are at present the following sectional organizations whose affiliation as Chapters with the Florida Engineering Society would be a splendid step toward the development of a great State Society competent and authorized to speak for the profession in Florida.

1. Civil Engineers Association of Southeastern Florida.
2. Southwestern Florida Association of Professional Engineers.
3. Central Florida Engineers and Surveyors Association.
4. North Central Florida Association of Engineers and Surveyors.
5. Northeastern Florida Association of Registered Professional Engineers and Registered Surveyors.
6. Florida Engineering Society.

OFFICERS

1. President, J. F. Charlton, Wheeler Building, Fort Lauderdale, Fla.; Secretary, Edmund Friedman, 1301 Court House, Miami, Fla.
2. President, E. A. Nordstrom, Taylor Arcade Building, St. Petersburg, Fla.; Secretary, Joe E. Lyles, Tampa Water Works, Tampa Fla.
3. President, Wylie W. Gillespie, Box 131, Tavares, Fla.; Secretary, Fred T. Williams, Sanford, Fla.
4. President, F. B. High, Box 133, Bunnell, Fla.; Secretary, R. T. Hargrove, City Engineer, Gainesville, Fla.
5. President, John O. Jackson, Bisbee Building, Jacksonville, Fla.; Secretary, Ralph E. Wendt, City Engineer's Office, Jacksonville, Fla.
6. President, J. E. Walker, P. O. Box 363, Ocala, Fla.; Secretary, W. W. Fineren, P. O. Box 3100, Gainesville, Fla.

An evidence of the spirit prevalent in Florida may be gained from the following commendable endeavor by one of the above-named groups.

February 25, 1935.

Chairman, State Board of Health,
Jacksonville, Florida

Dear Sir:

The writer is instructed by the Executive Committee of this Association, which embraces Orange, Lake, Osceola, Seminole and Brevard Counties, to write you in respectful protest against the appointment, by your Board, of any party

(*Continued on page* 20)

IOWA

Prepares to Ballot

Plans for submitting the question of affiliation of the Iowa Society with the National Society are progressing and ballots will shortly be forwarded to all members of the State body.

Legislation Affecting Engineers

At the recent meeting there was presented a most instructive brief, upon the subject of "Public Works Legislation and Needed Changes in the Engineers' Registration Laws," by C. H. Currie, Chairman of the Legislative Committee of the Society.

Mr. Currie, who is a member of the Iowa Board of Examiners, states in part as follows:

"*Public Works Legislation*

Discussing needed public works legislation at this time is something like counting the chicks before they are hatched. Congress has not yet worked out the method or methods of disbursing the $4,800,000,000 on the proposed PWA program and until this is done, it will be impossible to determine what Iowa laws will need to be amended or what new laws will be required to permit Iowa's taking advantage of this new program to the fullest extent. Assurance has been given that as soon as the program is determined the Government will notify each state as to what new legislation will be needed to permit it to take advantage of the act.

Independent of such action, which can not be determined at this time, we have several laws which should be modified to facilitate action under any rules which may be sent out from Washington. Among these are the following:

1. The 60% vote requirement in our present laws, for instituting public improvements requiring an election, could well be changed back to the old law requiring a majority vote. Several worthy improvements have been killed in Iowa due to this provision. This 60% requirement to carry a bond election is somewhat out of line with the present public works program. If we would revise this law and go back to the 50% vote requirement as it was many years ago, I believe it would facilitate the construction of many good improvements.

2. There should be no slackening in the authority given to County Engineers. On the contrary, I believe the public would be better served were more authority given to County Engineers.

3. The sewer rental law should be amended again to permit the sale of such bonds at a public letting. At present, the only way to sell sewer rental bonds is to the Federal Government. Most municipal bonds for such improvements last year sold for much less than the 4% offered by the Government and the same

(*Continued on page* 20)

WISCONSIN

To Amend Law

As a result of experience, Engineers of Wisconsin have come to an appreciation of the disadvantages of partial registration and legal subdivision of the profession.

From the Milwaukee Engineering the following has been excerpted:

"*Registration Law for Professional Engineers*

Five years ago the Legislative Committee of the Engineers' Society was instructed to study the desirability of establishing a registration law for professional Engineers, and to draft a proposed law if, as the result of such study, they deemed further action advisable. After several months of study the committee drafted a proposed registration law which was submitted to the directors of the Engineers' Society.

At that time a committee appointed by the Founders' Societies was working on the draft of a "model registration law for professional engineers," and the Directors of the Engineers' Society voted to delay the submission of the proposed law to the State Legislature until the drafting of the Model Law was completed.

However, the members of the local section of the American Society of Civil Engineers were finding it increasingly more difficult to secure and carry on their work in states having registration laws, and in 1931, in cooperation with the architects, they secured passage of the present registration law for Architects and Civil Engineers. The law gave legal status to the Civil Engineers of Wisconsin and secured for them reciprocal rights to practice their profession in any other state which had an engineers' registration law.

The present law, however, applies only to Architects and Civil Engineers. A majority of all the states now have Engineers' registration laws and Wisconsin Engineers in the Mechanical, Electrical, Mining, Chemical and other branches of engineering are experiencing great difficulties in securing and carrying on their business in other states. Unemployed Wisconsin Engineers must take an examination, generally not under very favorable conditions, to be eligible to take a position in a state having an engineers' registration law.

During the latter part of 1934 the Directors of the Engineers' Society were again urged to consider the question of the registration of all professional engineers. The draft of the Model Law had been completed by the committee of the Founder Societies and had been endorsed by a number of engineering societies and approved in principle by others. The Legislative Committee was instructed to con-

(*Continued on page* 20)

KENTUCKY

Interest Continues

The interest in the professional society movement continues and the enthusiasm of the new State Society has increased as a result of the visit of President Steinman of the National Society.

President J. S. Watkins has expressed the appreciation of the State Society in the following neatly penned letter of thanks:

"February 7, 1935.

My dear Dr. Steinman:

On behalf of the Kentucky Society of Professional Engineers I want to take this opportunity to again thank you for coming to our meeting in Louisville last Tuesday. Your message was an inspiration to every engineer present, and I am sure that our meeting, to which you contributed so much, will result in much good to the profession in this state.

With sincere regards, I am

Yours very truly,

(signed) J. S. Watkins
President."

The following resolutions complete the affiliation of the Kentucky Society with its National counterpart:

"WHEREAS, the Kentucky Society of Professional Engineers in Convention assembled believes affiliation with the National Society of Professional Engineers will be advantageous to the Kentucky Society and to the Engineering Profession in general,

BE IT RESOLVED that the Board of Direction be instructed and empowered to affiliate the Kentucky Society with the National Society.

(Carried unanimously).

Amendment to By-Laws

Article IV—Add Section 4 as follows:

Upon payment of four dollars ($4.00) annual dues in addition to the $2.00 annual dues of the Society, and upon certification by the Board of Directors, any Member of the Society in good standing becomes a member of the National Society of Professional Engineers.

(Carried unanimously)."

SOUTH CAROLINA

Responds to Movement

The movement sponsored by the National Society of Professional Engineers has met with encouraging responses from the first southern state to cast its lot with the New Deal in Engineering.

The following comments from one who was invited to lend his aid are indicative of the spirit which is abroad:

"I am in receipt of the first edition of the American Engineer and was greatly pleased with the initial issue of this publication; I hope it will develop and grow with the Society.

I have always felt that an association of all groups of professional engineers would contribute immensely to the upbuilding of the prestige of the engineering profession, and believe this is a step along the right lines.

I have been requested to serve on the Public Relations Committee and will do anything I can to cooperate. If the Committee has any special duties or programs to carry out, I will be glad to help to the fullest extent possible."

Secretary Roper of the Department of Commerce, in a recent address to the State Bar Association, stated that "South Carolina, geographically, industrially and socially, is an ideal state in which to inaugurate a constructive, analytical planning program which would serve as a model for other states."

"Every state," Mr. Roper said, "needs an engineering and planning unit to study the natural resources and environment relating to the state's economic and social development and progress."

MAINE

Introduces Legislation

Under the caption "An Act to Regulate the Practices of Professional Engineering and Land Surveying," a measure to register practitioners has been presented to the 87th Legislature of this State.

The proposal is patterned after the Model Law but modified in such manner as to satisfy the opinions of local practitioners.

Comment by the Bangor Daily News of February 20th was as follows:

Engineers and Surveyors

A bill to set up a state board of registration for engineers and surveyors was supported by a large group representing that profession.

Representative Rae Graves of Mount Desert led the proponents with the only personal opposition being registered by Henry F. Hill, a veteran civil engineer. The proponents said 26 states already had such boards.

The bill proposed to establish a board of five professional engineers to be appointed by the Governor which could examine candidates for registration. Fees for such examination would be $8 for surveyors, and $15 for Engineers, with renewals at from $1 to $3.

Percy Richardson, Portland Engineer, and others said the bill would make the profession "self-respecting" and compel an Engineer to prove his ability before he could practice, much in the same manner as requirements for the medical and legal professions function.

Lucius D. Barrows, Chief Engineer of the State Highway Department, said the bill was intended to "protect qualified Engineers against the unqualified Engineers and to protect the public against incompetent service."

The proponents said the measure would exempt those already practicing from examination if the board believes they had sufficient qualifications as shown by their experience.

Others who favored it were Howard Burgess and Frank Mason, both of the New England Public Works Service Company, Professor Evans of the University of Maine, Alfred Milliken, Consulting Engineer of the State Planning Board, Bryant Hopkins, Secretary of the Maine Association of Engineers, William Getchell of the Central Maine Power Company, Dean Paul Cloke of the Engineering Department of the University of Maine and President of the Maine Association of Engineers and Henry Doten of the State Bridge Department.

Hill, in his opposition, said he had not found anything "wrong" with Maine Engineers and that the public was not asking for the bill. He objected to any legislation which would bar "country surveyors" from performing the work which he said they now were doing in a competent manner.

VIRGINIA

Organization Plans

Advices from Virginia indicate that exchanges between prominent Engineers of the State will shortly result in the formation of a professional society affiliated with the National Society of Professional Engineers.

The January issue of the American Engineer referred to the examination required of applicants for licenses to practice. The opinion thereon is not an expression of the American Engineer but of certain residents of Virginia.

INDIANA

Considers Affiliation

Exchanges between the National Society of Professional Engineers and the Indiana Society are being continued.

There are approximately 1,000 registered Engineers in the state and the affiliation of Indiana with the National Society would be an added impetus to the movement which has already drawn nine major states into the confederation.

WEST VIRGINIA

Contemplates Law Revision

The West Virginia Society of Professional Engineers is considering a revision of the Registration Act. It is believed that a reduction in registration and renewal fees is justified, and it is hoped to have action on this proposal within the next six weeks.

A testimonial to the efforts of President Steinman of the National Society is manifest in the appended resolution:

"WHEREAS, our principal Guest Speaker, Dr. D. B. Steinman, has given of his time and money for many years in the interest and advancement of the professional engineer, being the father of the National Society of Professional Engineers, and being past President of A.A.E., we feel that he should be in a position with his many experiences to diagnose our troubles, and we feel especially honored that he has taken the time to come to West Virginia to tell us what is being done through legislative and organized effort by the profession to further their advancement. His lecture was most inspiring and beneficial.

THEREFORE, be it resolved that the West Virginia Society of Professional Engineers here in session do extend their sincere thanks and appreciation."

Engineers interested in revision of the present law should communicate with Robert Williamson, Jr., at P. O. Box 252, Charleston, W. Va.

HAWAII

Joins National Council

The Hawaii Territorial Board of Registration for Professional Engineers has petitioned, and has been accepted, for membership in the National Council of State Boards of Engineering Examiners. An Hawaii Society of Professional Engineers would be welcome in the confederation known as the National Society of Professional Engineers.

CONNECTICUT

Hearing on Legislation

A public hearing on the Registration Act now pending before the State Legislature was held by the Judiciary Committee of that body on Wednesday, March 13, 1935.

Among those appearing in support of the measure were John McDonald, State Highway Commissioner, who advised that 600 Engineers in the organization under his direction favor the enactment of the proposed law; Professors Scott and Farnham of Yale, Chairman Wiley of

the Connecticut Society of Civil Engineers, President Conlon and Legislative Chairman Elton of the Connecticut Society of Professional Engineers, and Messrs. Westcott and Mapes of the firm of that name.

The Bridgeport Chapter of the Connecticut Society of Professional Engineers in the person of President Shellenberger, and the Stamford Chapter of the said Society, have been especially active in promoting and furthering the legislation.

NORTH CAROLINA

Will Consider National Society

The North Carolina Society of Engineers will not hold its next meeting until midsummer at which time it is hoped that the question of affiliation with the National Society of Professional Engineers will be presented.

On April 10th the program of the National Society will be discussed at the meeting of the Raleigh Engineers' Club to be held on that date.

With South Carolina already in, it is hoped that the famous remark reputed to have passed between Governors of the Carolinas will find an echo in its Sister State.

NEW MEXICO

Registration Becomes Law

The legislature, at its recent session, passed a registration act for Engineers and Surveyors, conforming closely with the Model Law generally approved by engineering societies several years ago.

The Governor has affixed his signature and the act becomes effective on May 2nd.

Mr. E. L. Barrows, President of the New Mexico Section of the American Society of Civil Engineers, is to be congratulated for the successful campaign of himself and his associates.

PENNSYLVANIA

Chapter Activities Expand

From Publicity Chairman A. C. Fisher and Secretary W. E. Witte of the State Society comes the following interesting report:

"The Philadelphia Chapter of the Pennsylvania State Society held its regular monthly meeting on Thursday, March 7th, at the Penn Athletic Club in Philadelphia, Pa.

The meeting was preceded by a dinner. These repasts have become an interesting feature of the social side of this organization and permit of most interesting discussions. They allow members to be brought into a closer contact with one another. It is to be hoped that all members will take advantage of these monthly gatherings.

Following the dinner, with the President of the State Society, Thomas Battin, presiding, the reports of the various committees were called for.

Secretary Walter Witte read a number of inquiries from members from other sections of the State suggesting the formation of county chapters in their communities, and indicating a great interest in the activities of the State Society.

The Treasurer, Alfred Townsend, reported a large percentage of paid-up members and the financial condition showed a satisfactory balance.

Mr. R. C. Scott, the Chairman of the Membership Committee, presented several applications for membership and the Philadelphia Chapter and the State body are rapidly growing as a result of his splendid work.

Nominations for officers and directors to be elected at the April meeting have been received by the nominating committee and the following names will be placed on the ballot:

President, S. I. Sacks; Vice-President, J. E. Hires; Secretary, W. E. Witte; Treasurer, Alfred Townsend; Directors, R. Mellor, D. Fenston, G. Hyland, M. Blez, H. C. Rawley, R. D. Peters, O. H. Willard, J. S. Sholl.

Those residing within the city are expected to attend and cast their ballots. All members residing outside of Philadelphia will have letter ballots forwarded to them and the same will be marked and sent to the offices of the Chapter at 921 Widener Building, Philadelphia, Pa.

The speaker of the evening, Col. E. Myers, was introduced by State Director Samuel I. Sacks. Mr. Myers is at present a member of the State Registration Board for Professional Engineers and spoke of the methods used in examining the applications of those desiring to be registered. Satisfactory assurance that the applicants experience record is of a gradual normal development is of a greater value in rating than a sudden responsibility that has a very vague background.

Although there are apparently a number of persons practicing engineering in violation of the state law, it is difficult for the board to secure evidence without the full cooperation of the public and the engineering profession. It is therefore up to the Chapter and State Society to obtain such information with the proper evidence to prosecute such violations in the local courts.

The publicity obtained from these definite cases would be more far reaching than complaining to the board whose hands are at present tied due to lack of funds. The board receives no appropriation from the State and is thus handicapped in its efforts to enforce the law.

Since the last meeting, Chas. E. Rowe of the Board of Viewers of Luzerne County has taken up the idea of forming a local Chapter to include Registered Engineers of Luzerne, Bradford, Wyoming and Sullivan Counties at Wilkesbarre. As there are over 100 registered in these counties this should make a splendid local chapter.

Steps in the direction of organization in the vicinity of Pittsburg are also being taken.

Mr. James A. Gish, Jr., of Allentown, Pa., has been authorized to set up a chapter covering the four counties of Lehigh, Northampton, Carbon and Monroe. It is proposed that the name of the Chapter be the Allentown, Bethlehem or Four Counties Chapter.

Application forms for Chapter organization have been drawn up. A petition for a Charter for a Chapter in a single County must be signed by five Professional Engineers and for a Chapter covering more than one county by at least three Registered Engineers in each county concerned.

There are hopes that a local chapter, to be known as the Dauphin County Chapter, will soon be organized in Harrisburg.

The next meeting which will be preceded by a dinner, will be April 5th, 1935, at the Penn Athletic Club. Election of officers will take place and all members are urged to attend. The speaker of the evening will be Dr. Moses Behrend who will discuss legal methods used in enforcing the law relevant to the practice of medicine by the physician."

OHIO

Organization Continues

Spurred by the action of the Ohio Engineering Society in affiliating with the National Society the coalition of existing groups and the organization of new Chapters are progressing with unusual energy.

The following communication from the Chairman of the Membership Committee of the National Society speaks eloquently of the zeal which is fast making Ohio the center of professional engineering activities and hopes.

Dr. D. B. Steinman,
117 Liberty Street,
New York, N. Y.

Dear Dr. Steinman:

I want to take this occasion to express to you the deep-felt gratitude of all of the engineers in Ohio, for the splendid service you rendered us, while in attendance at our 56th annual meeting of the Ohio Engineering Society.

I have had occasion to talk to many engineers from different parts of the State, who characterize your address as being the high-spot of the Convention and the dawn of a new awakening in matters pertaining to our profession.

It will be of interest to you to know, that we now have twenty-seven local societies throughout the State. The new Ohio Society of Professional Engineers could not adequately compensate you for your splendid service beyond making you an Honorary Member of this Society. I presume you have been duly notified of this action.

My calendar is filled up, beginning tonight at Marion, with meetings throughout the State, completing the organization for the Local Chapters. As soon as this is completed, a complete detail will be furnished you and the members of my Committee in the National Society.

Permit me again to express our deep appreciation to you for your spleadid service, I am

Cordially and sincerely yours,
(Signed) Perry T. Ford.

Historic Resolutions

In order to affiliate with the National Society the Ohio Engineering Society passed the following significant resolutions which are worthy of emulation by other outstanding engineering agencies interested in promoting the welfare of Society and the profession to which it is so greatly indebted.

"Whereas, the Ohio Engineering Society approves and endorses the objectives and ideals of the National Society of Professional Engineers. BE IT THEREFORE, RESOLVED that the Ohio Engineering Society assembled at its 56th annual meeting at Columbus, Ohio, on February 14, 1935, hereby accepts the invitation of the National Society of Professional Engineers to become a Member State Society thereof. (Carried unanimously).

Amendments to the Constitution of the Ohio Engineering Society

Amend Article 1 to read:

This Association shall be called the

(*Continued on next page*)

Ohio Society of Professional Engineers.

Amend Section 2 of Article 3 on membership to read:

A candidate for active membership must be a Registered Professional Engineer or Registered Surveyor.

Amend Section 12 on dues to read:

The annual dues for the respective grades of membership shall be as follows, payable in advance at the beginning of each Society year: For active members who are Registered Professional Engineers, seven dollars ($7.00) per annum, covering membership in the State and National Societies of Professional Engineers and subscription to the American Engineer. For active members who are not Registered Professional Engineers and for Associate members, five dollars ($5.00) per annum, covering dues in the State Society and subscription to the American Engineer. For Junior members, three dollars ($3.00) per annum.

(Carried unanimously)."

Questionable Competition

In many parts of the country there exists competition between members of the teaching staffs of engineering schools and private practitioners which is resulting in endeavors to curb the private activities of full-time educators. California, Florida and other states have initiated measures intended to correct what, in the judgment of employed and practicing engineers is unfair to those whose only source of income depends on rendering engineering services to communities and corporations.

The Committee on Standardization of Engineering Practices in Ohio has adopted the following resolution which is to be submitted to the various county chapters and to the Ohio Society of Professional Engineers at its next regular meeting:

"A RESOLUTION—By the Committee for the Standardization of Engineering Practices in Ohio calling the attention of the Board of Trustees of Ohio State University to the outside professional activities engaged in by members of the faculty of the University and urging said Board to prohibit its faculty members from engaging in such professional activities.

WHEREAS, the City of Columbus, Ohio, has on recent occasions employed members of the faculty of Ohio State University as consulting engineers on a basis of compensation varying from $280 to $350 per month, and

WHEREAS, material harm is done to the engineering profession by practices of which these instances are typical, and

WHEREAS, this resolution is not directed against tests, reports, investigation, and/or research which lead to the extension of knowledge, which activities this Committee commend and endorse, and

WHEREAS, definite action against outside practices by university faculty members is not without precedent, and

WHEREAS, the objections of the Professional Engineers to such practices are:

(1) The practice of using a salaried position to compete unfairly with other engineers is unethical as approved by the American Society of Civil Engineers, December 15th, 1934, and as reported by "Engineering News-Record" January 3rd, 1935, and "Civil Engineering," January, 1935—"It shall be considered unprofessional and inconsistent with honorable and dignified bearing for any member of the American Society of Civil Engineers to use the advantages of a salaried position to compete unfairly with other engineers."

(2) It is unfair that a university engaged in the work of preparing men for the practice of engineering allow its faculty members to compete (often unfairly at low fees) with the men it has so trained, and render it more difficult for them to obtain employment either as employees, or as employers maintaining offices and organizations necessary to properly serve the public according to recognized standards of present-day specialized professional practice.

(3) The University is largely supported by taxation. It is well known that many competent engineers are unemployed or subjected to reduced income, and, as taxpayers, find it difficult to meet their legal and civic obligations.

(4) The time spent by many faculty members in the class room is sometimes as low as ten to fifteen hours per week. This, we know, is purposely made low so that the faculty members may engage in private practice, and give it the time required for detailed investigation and careful consideration, they must, of necessity, neglect their duties to their students.

NOW THEREFORE, Be it resolved that this resolution, after adoption be sent to the Board of Trustees of Ohio State University for consideration, and for such action as the said Board of Trustees may deem desirable for the benefit of the engineering profession, and the safeguarding of the interests of the University.

Be it further resolved that said Board of Trustees be urged to prohibit outside professional activities by members of the faculty of the University."

NEW JERSEY

Holds Annual Convention

More than three hundred Engineers from all parts of the State attended the Annual Convention of the New Jersey Association which took place on March 16th, at the Hotel Douglas in Newark.

The meeting, which commenced on time and adhered strictly to schedule, was opened with a splendid address of welcome from Denis F. Kelly, Director of Public Affairs of the City of Newark, and the reading of a special greeting from Governor Hoffman. Col. Hugh Kelly, retiring President presided, and retiring Secretary Gerald Knight recorded the minutes.

Addresses were delivered by President D. B. Steinman of the National Society, and Arthur V. Sheridan, Editor of the American Engineer.

Dr. Steinman presented a report of the activities of the National Society and in an eloquent appeal for support painted a most encouraging picture of possibilities for the profession.

Mr. Sheridan urged the creation of a National Department of Public Works as a Cabinet Post and pleaded for the elimination of divisional engineering licenses.

An interesting commentary was the statement of Dean P. H. Daggett to the effect that the entire faculty of the Engineering School of Rutgers University was in attendance. Dean Daggett pledged the Association full cooperation from Rutgers. Professors D. L. Swaley and Philip Kissam of Stevens Institute also urged greater cooperation and activity upon the part of both school and association as an aid to the National Society. Princeton and Newark College, in fact every Engineering School in the State, was officially represented.

The Public Works Engineer for the State of New Jersey pledged full compliance with requirements of the license law on all P. W. A. projects within New Jersey.

Among the resolutions passed were the following:

A petition to the Governor of the State to appoint, at the earliest opportunity, an Engineer on the Board of Utilities Commission.

An appeal for increased compensation for Engineers engaged on Emergency Relief Work.

A commendation of the E. R. A. for providing work for Engineers and approving large-scale projects which would not normally be undertaken and which do not interfere with the practices of private Engineers and Architects.

A petition to the Governor and the State Administration Council to broaden the scope of the following relief projects:

a. Coast and Geodetic Survey.
b. Restoration of Historic Monuments.
c. Riparian and Waterway Surveys.
d. Subsurface and Utilities Surveys.
e. Standardization of building codes, zoning and state, county and municipal planning.

A protest against the diversion from highway purposes of taxes derived from the use of motor vehicles.

In his farewell address President Kelly traced the spread of the professional State Society and its purposes and possibilities.

* * * *

Excerpts from the address follow:

"It might be well for us to reminisce a little and recall that only a decade ago there was no State Association. Engineering in the State and the Nation was not officially recognized as a profession. It was on March 18th, 1924, eleven years ago, that New Jersey blazed the trail by organizing the first group of registered professional engineers to further the welfare of the profession. Imitation is said to be the sincerest form of flattery and from the seed planted in New Jersey has grown societies in many of the States, and this year has seen the formation of a new national society."

* * * *

"In addition to the definitely expressed objectives we have unwritten objectives which we must ever bear in mind, and as I always believe in calling a spade a spade, I have no hesitancy in expressing myself here on these unwritten objectives. First, and foremost, is Compensation for Professional Services. Second—Security in our Appointments, and Third—Competition on an equal basis.

These unwritten objectives may smack of trade unionism, but I would be willing to have it called by that name or any other name if the professional engineers of this State and our nation could be treated with the same respect, and consideration given to their requests with the same degree of celerity, as the trades unions receive.

In other words, let us organize and stay organized. Let every registered man in the county pay the $10 to the National Society, which sum, by the way, is so incidental to dues paid to other organizations as to be negligible. If the payment of $10 per year will enable

your State and National Society representatives to secure for you adequate professional remuneration it is at once evident that you have made a wise investment.''

* * * *

''The year just passed has marked for the professional man, through no fault of his own, perhaps the lowest ebb of engineering achievement since engineering became a recognized science. It has been a year of hardship, an almost complete prostration of industrial enterprise and a year of intolerable adjustment to a new economic order. Many of our most capable technical men, most distinguished engineers and architects, have sought in vain to keep their private practices alive. Except for those more fortunately placed in permanent positions, the vast majority of our engineers have had, through sheerest necessity, to fall into line and take relief work. Even those who have held positions have had to fight to hold them.

During this year, with its alphabets, codes and other experiments, we have seen a nation-wide acceptance of the proposition advanced at our convention two years ago, the one sound implement of recovery—''Public Works.'' Useful, vitalizing Public Works that should set the heavy goods industry in motion.

We have seen every technical journal, engineering magazine, trade bulletin and newspaper take up the challenge of the ''white collar'' man and we can discern in it the recognition that leadership will be recruited from this class, either for an upheaval or for stability.

We must now be prepared, through organization, to take fullest advantage of this fact and opportunity.''

* * * *

''Senator Wagner of New York, in a recent speech in the Senate of the United States, said 'he could not sit idly by and see the inauguration of a policy, in the name of relief, that might drag down the whole private wage structure of the country. Bitter experience has taught us that wages seek the lowest level—if those on public works are treated on a relief basis, every objective of public works will be defeated. Morale will be lowered, not restored; wages will go down, not up; purchasing power will shrivel, not expand and business will be demoralized, not stabilized.' ''

The ''bitter experience'' he referred to, was undoubtedly the result of the headlong, ill-considered actions taken by a congress and by administrators who came from every walk of life, except, in rare instances—the engineering profession. The rule of the baker, the butcher, the candlestick maker—the one without the competent background of applied skill and experience, which is the first asset of the trained engineer, has, to my mind, been the reason for that ''bitter experience.''

* * * *

''We have dared to take a modest part in public affairs and things political. This is an unexplored field for the Professional Engineer, but we must and shall go into it. We have a national organization now for which we must equip our men and in which we must be more than a lay figure. This year has seen a definite thrust in that direction. We produced a roster and brochure of information for the engineer, that has found its way into the engineering societies and libraries of twenty-one States. We have eleven chapters and three local engineering societies in the State that are all steamed up with enthusiasm and raring to go. Two of our old chapters have come back with new life, and all, despite the harrowing times, are healthy and building up their membership.

I believe I can safely say we have taken a long forward step this year.

I must say a word on behalf of our younger members. I earnestly request that younger men be given a place on all committees and that they be allowed to share the responsibilities of our association's effort to benefit the profession. To them must be entrusted the final erection of the structure whose foundation we have laid, and, while some of their ideas for the betterment of the profession may seem radical, a little retrospection on our part will show that the ideas of our youth were even more so. It was these same ideas in the final analysis that produced our State Association, and so I ask that you allow the younger men more of an opportunity for expression in our State and Chapter affairs. If we can help them in the solution of their problems today, they will undoubtedly be better fitted to solve the problems of tomorrow.''

Following the election and installation of officers the incoming President, Morris Goodkind, delivered his inaugural address in which he outlined the problems and opportunities of the Association. A later issue will contain a more detailed account of this address.

The convention, which had opened with an inspection of exhibits supplied by various municipalities, corporations, public and private agencies, colleges and organizations throughout the State, concluded with a dinner in the evening at which President Goodkind, Walter Cope, President of Drake Business College, and the Hon. Bernard Lamb, State Finance Commissioner, were the speakers. Col. Hugh Kelly presided.

The newly elected officers of the New Jersey Association are:

President, Morris Goodkind; 1st Vice-President, Gerald W. Knight; 2nd Vice-President, Geo. M. F. Randolph; Secretary, Ernest F. Weeks; Treasurer, Trevor J. Powell.

The Essex County Chapter was host to the visiting Engineers. Its officers are:

President, Edward S. Rankin; Vice-President, Spencer C. Hamilton, Jr.; Secretary, W. E. Tennyson; Treasurer, Peter H. Glannan.

Registration and Exhibits:

1:30—2:00 P. M.

A remarkable display of exhibits has been arranged in the foyer which will be of interest to all Engineers. This display includes exhibits from the State Highway Commission, State League of Municipalities, Princeton, Rutgers, Stevens, Newark College of Engineering, Portland Cement Association, Public Service, Port of New York Authority and others.

Meeting:

2:30—5:00 P. M.

There are many matters of importance which affect our profession to be discussed and it is to your interest as an Engineer to be present. The guest speaker of the meeting will be Dr. D. B. Steinman, President of the National Society of Professional Engineers, and an Engineer of wide repute. The meeting will also be addressed by Mr. Arthur V. Sheridan, Editor of the American Engineer and Chief Engineer of the Borough of The Bronx, New York City.

Bridge Party:

2:30—5:00 P. M.—for the ladies.

A bridge party will be held in the lounge of the hotel for the ladies. Prizes to be selected and awarded by the Convention Committee.

Social Hour:

5:00—6:00 P. M.

Time to view the exhibits.

Annual Dinner:

6:00 P. M.—the ladies are invited.

Price $1.50.

Guest Speaker—Bernard Lamb, the New York State Finanee Commissioner.

Executive Board Meets

For the information of the New Jersey membership the minutes of the meeting of the Executive Officers and Trustees of the New Jersey Association held, in Jersey City, on February 20th, are herewith appended:

A motion was regularly made and seconded that $100 be allocated from the Association's Treasury to be placed at the disposal of the Convention Committee. Motion passed.

A motion was regularly made and seconded that each Chapter be asked to make a donation to the Association's Treasury. Donations of $10 and $15 gladly accepted and appreciated. Motion passed.

A motion was regularly made and seconded that all manuscripts for the American Engineer should be sent to the Secretary for delivery to the Editor. Motion passed.

It was agreed after some discussion that every licensed Engineer should receive a Convention Meeting notice. It was also suggested that the Secretary send an invitation to the Montclair Engineers' Club, Plainfield Engineers' Club and the Trenton Engineers' Club. It was further suggested that copies of the Convention Notice be sent to large industrial concerns employing Engineers with the aim of interesting them in attending the Convention.

President Kelly dispensed with the reading of the Salary and Fees schedule at this meeting. It was the opinion of the President that this schedule be held in abeyance until the reports from each of the Chapters have been received by the Secretary. At this time the complete schedule with the recommendations from the Chapters can be given consideration at a special meeting by the Board of Trustees.

The resolution on unemployed Engineers and earmarking of funds for their employment was read by the Secretary from the minutes of last month's meeting. A copy of this resolution was forwarded to Governor Harold G. Hoffman and Lewis Compton, State Director, E.R.A. The following letter in reply from Lewis Compton was spread on the minutes:

(*Continued on next page*)

This will acknowledge receipt of your letter of February 13th, enclosing a letter of preamble and resolution adopted by the members and Board of Trustees of the New Jersey Association of Professional Engineers and Land Surveyors, held on January 24, 1935, concerning special grants for the operation of the professional and non-manual program.

Mr. G. W. Knight, Secretary of the New Jersey Association of Professional Engineers and Land Surveyors, forwarded a copy of this resolution to me on January 30th and I have replied to him in connection with this matter.

Very truly yours,
(sgd) LEWIS COMPTON,
Executive State Director."

Mr. G. W. Knight replied for the Governor in his capacity as Consulting Engineer to Governor Hoffman and stated that the resolution had been turned over to him for consideration and that the Engineer could be assured of every consideration. Mr. Compton had verbally told Mr. Knight that nothing can be done at present until such time as a definite policy of monies is laid down by Washington.

Mr. H. S. Hobby brought up the point that no funds are being allocated right now for the employment of professional men and that Washington seemed primarily interested in Construction Works Programs.

NEW YORK

Mid-Winter Meeting of the New York State Society

A meeting of the Board of Directors was held at the Ten Eyck Hotel, Albany, on March 2nd, 1935, at which it was determined that: the annual dues of the State Society shall be $5.00; arrearages of dues prior to December 31st, 1933, will be remitted to members who shall have paid dues in full, for 1934 and 1935, to the Chapter, State and National bodies on or before July 1st, 1935; the annual meeting of the State Society will be held in New York City on Saturday, May 18th, 1935.

Following the meeting of the Board of Directors the Chapter delegates to the State Society convened under the chairmanship of President Arnold G. Chapman.

Hon. Kenneth Y. Marsh, Commissioner of Public Works, representing Hon. John Boyd Thacher, Mayor of the City of Albany, expressed the regrets of the Mayor at his unavoidable absence and extended a cordial welcome to the delegates.

The President was requested to convey to Senator Thomas C. Desmond the best wishes of the Society for a speedy recovery from his illness and to acknowledge its cordial appreciation of his services, in the legislature, to the engineering profession in this State.

Approval was recorded of the following bills introduced by Senator John J. Dunnigan: Senate Bill, Intro. No. 1275, Print No. 1438, amending the Engineers' and Architects' Laws to require that plans for (a) buildings costing $5,000 or more and containing more than 15,000 cubic feet and (b) alterations costing $5,000 or more must be filed by licensed Professional Engineers or Architects; Senate Bill, Intro. No. 1434, Print No. 1645, amending the Engineers' Law to provide that, in the future, corporations shall not be licensed to practice engineering.

The New York State Society of Architects was assured of the whole-hearted cooperation of the New York State Society of Professional Engineers in all efforts to eliminate illegal practice in both professions.

Dr. D. B. Steinman, President of the National Society of Professional Engineers reported that: nine state engineering societies have voted to affiliate with the National Society; enthusiastic approval of the National Society is being manifested by Engineers throughout the country; the First Annual Meeting of the National Society will be held in Columbus, Ohio, on October 23rd and 24th, 1935, and that reports indicate that there will assemble there over 2,000 Professional Engineers—the largest representative gathering in the history of the profession.

The Metropolitan Regional Committee's report on engineering salaries was approved.

A nominating committee composed of the following members was elected to select officers and directors to fill State Society offices which will become vacant at the end of the present official term: Messrs. Thomas A. Devane, Albany Chapter; Fred W. Fisch, Schenectady Chapter; Charles W. Marvin, Monroe Chapter; Grant K. Palsgrove, Rensselaer Chapter; Charles R. Waters, Erie Chapter.

Authorization was given to the President to appoint a committee to consider the revision of the State Society Constitution.

Approval was given to a recommendation by the Westchester County Chapter that members of the Congress be requested to make provision for the employment of local engineering and architectural organizations in the preparation and supervision of contracts for public works which are to be financed with federal funds. The following resolutions were adopted:

Federal Moneys to States and Communities to Be Contingent Upon Maintenance of Regular Personnel

WHEREAS, The Federal Government is appropriating huge sums for the purpose of reducing unemployment as the most direct means of promoting national recovery, and

WHEREAS, The said Federal Government is asking for cooperation from state and municipal public agencies, and in certain instances specifying financial appropriations as an evidence of cooperation upon the part of agencies applying for funds, and

WHEREAS, the several states including New York, together with the various subdivisions and communities thereof, have been receiving and are still petitioning for Federal moneys to aid in decreasing unemployment through the prosecution of useful work, and

WHEREAS, the employment through such means of many hundreds of thousands over a period of several years is definite evidence of the ability of states and communities to gainfully employ qualified persons over and above their present depleted personnel, and

WHEREAS, the said states and communities have during these years dropped from their rolls many qualified and experienced employees, especially in the Civil Service classification, whose services could well and properly be used in work beneficial to the state and community, and

WHEREAS, it is a moral obligation upon the said states and communities that they shall not add to the task of the nation in caring for their unemployed citizens, now therefore be it

RESOLVED, that the New York State Society of Professional Engineers, in meeting assembled at Albany, March 2nd, 1935, does herewith petition the State of New York and the various communities thereof, in the person of the administrative agencies thereof, to give tangible evidence of good faith and cooperation by agreeing to restore to employment, in their appropriate titles and grades, all persons whose names appear on the Preferred Competitive Civil Service lists of the State and Political subdivisions thereof, and be it also

RESOLVED, that the said New York State Society of Professional Engineers does herewith address itself to the President and Congress of the United States, together with the several Federal agencies appointed to administer public and relief work, to the effect that all loans and grants of Federal moneys be made contingent upon the maintenance, at full strength, of the regular personnel of the state or municipal agencies applying for such moneys.

Written Examinations for Licenses

Concerned with protecting the public and the profession of engineering in accordance with the intent and purposes upon which professional license laws are enacted, and

Convinced that the qualifications of candidates for licensure should be carefully and thoroughly determined in the manner provided for by law, viz., a written examination of all candidates without any exception, in the same manner as is followed in determining fitness for admission to the practice of law and medicine, now therefore be it

RESOLVED, that the New York State Society of Professional Engineers, in meeting assembled at Albany, March 2, 1935, does hereby direct attention of the Board of Examination for Professional Engineers and Land Surveyors to the approaching period wherein qualification by written examination must, in accordance with the law, be required of all persons, and urges upon the said Board the adoption prior to 1937 of the policy of requiring written examinations in all cases, except wherein qualification in other states or long-established lawful practice of unquestionable character may be accepted in lieu thereof, of candidates for admission to the practice of engineering, and be it further

RESOLVED, that the said New York State Society does also urge upon the Board the policy of permitting candidates to take the required written examination in the sciences and principles of engineering at any time subsequent to graduation from a schoool of recognized standing with the proviso that final qualification and admission to practice will be granted only upon completion of the prescribed experience.

Cabinet Office of Public Works

WHEREAS, the protection of its citizens from the ravages of want is to-day recognized as being an obligation of government fully as important as protection against an alien foe, and

WHEREAS, the creation of opportunity for employment must needs be a function of government, and

WHEREAS, the fulfillment of such function demands the planning and execution of works to develop the land, water and natural resources of the nation, and

WHEREAS, the absence of a constitutional Federal Agency empowered to exercise jurisdiction over such matters makes impossible the control of a vital field of human endeavor, to-day, so essential to the well being of mankind that all other activities are dependent upon it, now therefore be it

RESOLVED, that the New York State Society of Professional Engineers in meeting assembled at Albany, March 2, 1935, does herewith petition the National Society of Professional Engineers to immediately take steps to place before the President, the Congress and the people of the United States the necessity for the creation of a Cabinet Office of Public Works to be presided over by a professional Engineer, and be it also

RESOLVED, that copies of the resolution be addressed to the members of the United States Senate and the House of Representatives from the State of New York.

Report of Board of Examiners

Statistics of interest relative to the action of the New York State Board of Examiners of Professional Engineers and Land Surveyors upon applications for licenses received since 1920.

Year	Number of Applications Received	Passed	Per Cent Passed
1933-34	1125	455	40%
1932-33	1060	455	43%
1931-32	1103	503	45%
1930-31	1911	1051	55%
1929-30	1497	843	53%
1928-29	755	421	55%
1927-28	604	405	67%
1926-27	496	403	81%
1925-26	834	532	64%
1924-25	1934	858	44%
1923-24	6958	4854	69%
1922-23	?	1768	
1920-21	One meeting on policy		
Total Passed		12,548	

A reminder:

The law requires every practicing Engineer and Land Surveyor to renew his license annually. Renewal application cards are to be sent with the statutory fee of $1.00, plus an additional fee of $1.00 for each 30 days delay beyond January 1st, to the Finance Division of the State Education Department, Albany.

Professional Engineers and Land Surveyors failing to secure an annual registration certificate and continuing to practice later than May 1st may be considered as illegal practitioners and have their licenses suspended or revoked.

A printed list of the legally registered Professional Engineers and Land Surveyors is published on or about May 1st. Many of our members failed to renew their 1934 licenses in time to have their names printed in the roster of registrants for that year.

The early transmittal of renewal applications would be appreciated by the executive officers of the State Education Department and of the State Society.

CHAPTER NEWS

By

Raphael J. Smyth

ALBANY COUNTY

Members of the Albany, Rensselaer and Schenectady County Chapters gathered at the University Club, Albany, on February 25th, 1935, to attend the monthly meeting of the Albany County Chapter at which was featured an illustrated presentation of "The Picture of Boulder Dam" by Mr. C. B. Passavant of the Babcock and Wilcox Co. of New York City.

The presentation was of timely interest because the closing of the gates of the diversion tunnels on February 1st, historically recorded the completion of the major engineering and construction phases of the advancement of the greatest single hydraulic project since the Panama Canal toward its three-fold goal of taming the Colorado River; to discontinue its annual destructive flood practices; to provide water for the irrigation of 2,000,000 acres of land; to generate sufficient power to make the project self-liquidating.

The moving picture treatment of the subject was the equivalent of an extended inspection tour: through some of the country's major fabricating plants engaged in the fulfillment of Boulder Dam contracts; of the site of the Dam and its backwater territory, which made possible a full visualization of the magnitude of the project.

There was also a detailed depiction of the most advanced engineering methods and shop practices utilized in the fabricating and X-ray testing of fusion-welded pipes. The testing of the large pipe sections—some of which are 30 feet in diameter, 2½ inches in thickness, and weigh 170 tons—involve the broadest industrial application of X-ray testing equipment developed to date.

Courtesy: Mr. H. S. Wilgus, Secretary-Treasurer.

BROOME AREA

A joint meeting of the Broome Area Chapter of the New York State Society of Professional Engineers and the Ithaca Section of the American Society of Civil Engineers was held in the American Legion Club House, at Binghamton, on February 19th, 1935.

The subject of the "Development in the use of Asphalt Road Surfaces" was discussed by Major Bernard E. Gray, Highway Engineer of the Asphalt Institute, New York City.

Major Gray is an alumnus of Tufts' College. He was connected with the Highway Department of the State of Massachusetts, before the World War. Since the war he was attached to the Bureau of Public Roads for a short time and later became a Division Engineer of the West Virginia Road Commission, which post he held until 1930.

The discussion was highly informative and warmly applauded.

Courtesy: Mr. H. W. Grow, Binghamton, and Mr. J. E. Perry, Ithaca.

ULSTER COUNTY

The annual meeting of the Ulster County Chapter was held in the Crystal Room of the Governor Clinton Hotel, Kingston, on February 18th, 1935.

The following officers were elected to serve during 1935: President, Mr. George W. Codwise, Vice-President, Mr. Henry D. Darrow; Secretary-Treasurer, Mr. Edward P. Ward; Directors, Messrs. James A. Guttridge and P. Edwin Clark.

Mr. Arthur Colligan, District Manager of the Central Hudson Gas and Electric Corporation, and a member of the Chapter, delivered a highly interesting lecture on the laying of a gas main under the Hudson River between Poughkeepsie and Highland enabling the entire system from Kingston to Newburgh to be supplied from any one of the plants located at Newburgh, Kingston or Poughkeepsie.

Mr. James F. Loughran, Chairman of the Committee on Charges for Surveys, announced that a schedule of charges would be submitted at the next meeting of the Chapter.

It was learned by the Chapter that, in the annual report of the Police Department, it appeared that seven "Engineers" had fallen into the clutches of the law. An investigation was made into the matter, and—much to the relief of the investigators—it was discovered that not one of the so-called Engineers were of the "Professional" variety. The matter was discussed in a friendly manner with the Chief of Police who agreed that, henceforth, malefactors of any kind (of great wealth or otherwise) would—all allegations notwithstanding—not be entered upon Police Department records as "Engineers" unless they held licenses to practice Professional Engineering.

Chapter meetings in the future will be held on the third Monday of each month.

Courtesy: Mr. Edward P. Ward, Secretary-Treasurer.

WESTCHESTER COUNTY

A large and enthusiastic gathering of the Westchester County Chapter assembled on March 6th, 1935, in attendance at the monthly Chapter meeting in the chamber of the Supervisor in the Court House at White Plains.

Mr. W. A. Russell, collaborating with a representative of the Chrysler Company, exhibited four reels of sound motion pictures in an interesting detailed descriptive recital of the vast amount of research and experimental work which has attended the development of the airflow type of automobile.

Mr. A. M. Anderson, chairman of the Chapter's Committee on Public Speaking, delivered an engaging short talk on the topic "Public Speaking." Under the auspices of this committee there is being inaugurated a custom of having one of its members discuss an assigned subject for a period of five minutes at each Chapter meeting.

Officers and directors for the coming business year will be installed at the annual meeting of the Chapter which will be held in White Plains on April 3rd, 1935.

Courtesy: Mr. John Avery, President; Mr. Francis J. Laverty, Executive Secretary.

BRONX COUNTY

On March 7th, 1935, the Bronx County Chapter held its annual meeting at the Concourse Plaza Hotel, Bronx; upwards of 80 members were in attendance.

At the dinner-meeting of the Executive Board, which in accordance with long-established practice preceded the Chapter meeting, a copy of a letter addressed by the Bronx Chamber of Commerce to legislators at Washington was read which urged that local private Engineering, Architectural and Contracting organizations be commissioned to prepare and prosecute (in part at least) public works contracts which are financed by federal funds. This effort was cordially approved and similar action by the Chapter was authorized. The Secretary was instructed to transmit to the Bronx Chamber of Commerce an ac-

(*Continued on next page*)

knowledgement of appreciation of the interest manifested in the welfare of the the profession.

The Board unanimously extended a vote of thanks to Messrs. John H. Knight and Robert F. Eagar, who after years of service of inestimable value were retiring from the Board because of constitutional limitations placed upon continuous periods of membership in that body.

At the Chapter meeting a report on the work of the Bronx Civic Congress was made by Mr. Joseph F. Lamb, President of the Chapter and its representative in that organization. (This Congress is composed of representatives of the leading civic and professional organizations of the county).

Mr. A. V. Sheridan, Editor of the American Engineer, reported upon the progress of the National Society and also upon the activities of the Chapter Committee on New York Charter Revision, of which he is chairman.

The following officers were elected: President, Raymond J. Van Wagner; Vice-President, Mr. Rudolph C. Lang; Secretary, Mr. Raymond C. Sullivan; Treasurer, Mr. W. L. A. Arctander; Directors for 3 years: Messrs. Joseph A. Brunner, Edward T. Ebert, Charles F. Giraud, Raphael J. Smyth.

Messrs. Robert J. Eagar and Joseph A. Brunner were appointed to cooperate with the Queens County Chapter in the organization of a City Conference of representatives of the five Chapters in the City of New York in order that their efforts might be coordinated for the advancement of the welfare of the community and the profession.

Messrs. George C. Shannon and Eugene E. Farnan were also appointed to attend a meeting of representatives of various City Chapters to discuss T. E. R. A. and P. W. A. rates of compensation for engineering services.

Professor Alexander Haring, of New York University, acting as the spokesman of the Chapter, paid an eloquent tribute of affectionate esteem to Mr. Joseph F. Lamb, upon his retirement from the presidency, and presented him with a handsome Westminster Chimes Clock bearing a bronze inscription of appreciation from the Engineers of The Bronx for inspiring leadership during his terms of office.

Courtesy: Mr. Raymond C. Sullivan, Secretary.

QUEENS COUNTY

The following report was received from Mr. Andrew K. Johnson, President of the Queens County Chapter:

"It is the common practice in the legal profession to take precautions that all those who testify concerning or involving engineering or surveying are licensed professional engineers and/or land surveyors.

The Queens County Chapter recommends that the State Society communicate with all bar associations, district attorneys, and all lawyers, informing them of the Engineer's licensing laws and pointing out to them the restrictions of the law and the advantages to the legal profession and to the public of its strict application.

The suggestion of the Board of Directors of the State Society that prior dues be remitted or cancelled against all members who pay their 1934 and 1935 dues on or before July 1, 1935, was approved by the Chapter, and a drive was started to effectuate this proposal.

A special committee was appointed to investigate the possibilities, and to formulate plans, for augmenting employment of engineers.

The Chapter called a meeting of representatives of all the Chapters within the City of New York which was held on March 12th for the purpose of organizing a City Conference. The City Conference has been temporarily organized and has under consideration the Queens County Chapter's recommendations for the revising of the Charter.

Mr. Martin Nelson who has served as Executive Secretary for several years was reappointed by the Board of Directors to serve during 1935.

President Andrew K. Johnson appointed the following Committee Chairmen for the year 1935:

Membership, Edward J. Flanagan; Chapter Activities, William H. Bertram; Law and Ethics, Frank Lilien; Public Relations, George P. Winn; City Conference, A. Levin; Charter Revision, George P. Winn; Committee on Unemployment, W. P. Warrendorf; Publicity, I. W. Conway.

KINGS COUNTY

At the February meeting of the Kings County Chapter a committee composed of Messrs. Harry S. Lewis, L. C. Scott and H. A. Tonne was appointed to cooperate with representatives of the other chapters of New York City in an endeavor to protect and advance the status of professional engineers in governmental emergency public work agencies.

Plans are being worked out by this committee to secure observance of the provisions of the license law of the State and also compensation for engineering employees more equitably commensurate with the value of the technically skilled services rendered by them.

FLORIDA

(*Continued from page* 13)

other than a qualified Engineer to serve as your Director of Sanitation.

This protest does not intend to offer any personal criticism of any party whose name might be considered for this position. We understand that the duties of this officer will include the checking and approving of plans and specifications for sanitary works in Florida, such as water works, sewage lines, and treatment plants, insect control, etc. We feel that this work should be under the direction of an outstanding Engineer specializing in sanitation. This is the practice in other States.

This association respectfully requests your Honorable Board to give this subject serious consideration and we believe that after consideration you will be convinced of the necessity of having this work under the direction of a competent Engineer. We do not believe that a member of any other profession, however competent in his own line of endeavor, can satisfactorily perform this function.

Yours very truly,
Central Florida Engineers and
Surveyors Association
(Signed) Wylie W. Gillespie,
President.

Extensive preparations have been made for the meeting of the Florida Engineering Society, which will be held at Miami on April 4th, 5th and 6th. T. Keith Legaré, Secretary of the National Society of Professional Engineers, is expected to address the Society on the National movement.

Joint sessions, with the American Society of Civil Engineers, whose spring meeting will take place on the same dates have been scheduled and a most interesting program has been arranged.

An invitation to attend both conventions is extended to all Engineers who may find it possible to be in Florida on the dates above noted.

WISCONSIN

(*Continued from page* 13)

sider the possibility of broadening or mending the present Architects and Civil Engineers Registration Law to make it applicable to all the other branches of professional engineering. Aided by the background of the Civil Engineers' Law, and guided by the Model Law, the committee has drawn an amendment to the existing law covering all the branches of engineering by the term "Professional Engineer." (As advocated by the Model Law.) The Directors of the Engineers' Society have given their approval in principle to this amendment.

The foregoing notations give some of the reasons for the Society's active interest in establishing the legal status of engineers. Economic pressure and the adoption of registration laws for engineers in an increasing number of states, seems to make a Wisconsin registration law imperative at this time in order to protect the rights of the engineers of this state, and to raise the status of the profession.

To actively foster an amendment, and to secure its passage by the State Legislature requires work and money.

It is hoped that every professional engineer within the State will give his whole-hearted support to the passage of this amendment.

In the near future every engineer should receive a letter asking his aid and support to help pass this law—a law which will establish him legally in his profession, preserve to him the right to practice his profession in any state in the Union and ultimately, greatly raise the status of the Engineering profession as a whole."

IOWA

(*Continued from page* 13)

might possibly be true for sewer rental bonds.

4. A new bill has been offered relative to land surveying and the writer feels that this bill should be given wholehearted support.

The writer has written to quite a few Engineers for their suggestions. Several of these have not answered and some have covered one or more of the points given above.

It would be of interest to know how many of the Engineers present have become acquainted with their new representatives and senators and how many of

those present have ever discussed needed engineering legislation with their representatives and senators. The passage of a bill can best be assured if every Engineer would write to his representative and senator concerning new bills which involve engineering. (Steiner's list.)

Engineer's Bill:

In discussing the proposed amendments to the Engineer's Registration Bill, I am taking advantage of a very carefully worked out analysis as made by the Board's Committee, Mr. Nemmers and Mr. Dodds.''

Explanation:

1855:—The proposed changes in the law relating to the profession of engineering, include in section 1855 a new definition of professional engineering to conform to the uniform recommended code. This definition includes only those engaged in professional engineering, thus eliminating all confusion as to persons connected with purely operative services which do not require ''the application of engineering principles.''

This definition specifically excludes the contractor, the superintendent and the foreman and excludes by inference small projects mentioned in the old definition, but which do not come under this definition because they do not require professional training in ''mathematics, the physical sciences and the principles of engineering'' for this execution.

1864:—In section 1864 the change is editorial and eliminates some of the objectionable procedure in connection with renewals which is corrected in section 1869-bl.

1866:—Section 1866 is revised to cover the subject of fees and applications only. There is no change in requirements from the present procedure.

The subject of qualifications which has been covered in Section 1866 is changed and enlarged and numbered 1866-a. The age limit is dropped but the experience required is changed to eight years from six. Under the proposed wording the land surveyor will still be required to have six years of experience or be a graduate in surveying and have two years of additional experience. This clarifies the law as it relates to land surveying.

Under the new proposal the college graduate can be exempted from the examination in fundamentals but must show four years of experience satisfactory to the board in addition to his college training. This will usually permit a college graduate to be registered at twenty-five or soon thereafter.

The eight-year requirement is needed to protect the public in this profession just as it has been necessary in the medical profession to require more maturity in its practitioners.

1869-bl:—The changes in 1869-bl. will save the board at least $500 per year in needless office expense and will put an end to procedure which is very annoying to the registrants.

It will also rectify a very unfair provision of the law which requires the revocation of all unrenewed certificates a month before they expire.

It reduces the penalty from $10 to $2 for late renewal and extends the time for renewal one month.

1875:—This section provides at present that any person who is not legally authorized to practice—and who practices or uses a designation tending to imply that he is a registered practitioner, is guilty of a misdemeanor.

The proposed change leaves all of the fraudulent practices covered in the present section as a misdemeanor but grants the right of injunction in cases of unauthorized practice or misuse of the designation ''Professional Engineer.'' In this section it is also proposed to require the use of registered professional engineering on public work costing over $2,000.

LICENSE EXAMINATION

(*Continued from page* 10)

2 Describe briefly *three* ways in which the yield point of steel may be raised above that of ordinary structural steel.

3 A heavy steel strut 20 feet long between two walls undergoes a temperature rise of 40° F. If each wall yields 0.01 inch, what will be the unit stress in the strut?

4 A garage in the middle of a block occupies a space 100 feet front by 80 feet deep. It has a street level and an upper level and includes a gasoline station. The upper level is reached by a ramp. Sketch a plan of the street level, showing necessary facilities.

5 A wood floor with a 14-foot span is to carry 250 pounds per square foot. An opening 5 feet square is to be left in the center of the floor. Sketch a plan showing how the floor joists should be placed. Design one of the joists, using a working stress of 1000 pounds per square inch.

6 When are stirrups required in a reinforced concrete beam and how are they designed?

7 The top chord of a truss is made up of two 15-inch, 40-pound channels, each with a side plate 12 inches by ⅜ inch, and one cover plate 22 inches by ½ inch. Compute the moment of inertia about a horizontal axis through the center of gravity.

8 A tension member consisting of a single bar 12 inches by ⅝ inch is to be spliced to a similar section with ⅞-inch rivets. Design and sketch a joint of maximum efficiency, using the following unit working stresses in pounds per square inch: tension 18,000, shear 12,000, bearing 24,000.

9 The left half of a beam on a 30-foot span has a uniform load of 4000 pounds per linear foot. A concentrated load of 30,000 pounds is located 10 feet from the right end. Draw the shear and moment diagrams.

10 Design a simply supported reinforced concrete slab spanning 8 feet under a load of 500 pounds per square foot. Compute bond and shear stresses.

11 A steel beam is on a 30-foot span and carries a uniform load of 2000 pounds per linear foot. The top flange has a lateral support at the mid-point. What rolled section will be required?

12 Design a reinforced concrete column for a central load of 500,000 pounds.

THE UNIVERSITY OF THE STATE OF NEW YORK

Examination for Professional Engineers

ELEMENTS OF ELECTRICAL AND MACHINE DESIGN

Tuesday, January 29, 1935—1.15 to 4.15 p. m., only.

Answer any eight of the following questions but no more. If more than eight questions are answered, only the first eight will be considered. Slide rule and any reference books may be used. Return these questions with your answer papers. All work in the solution of problems must be submitted.

1 Power may be transmitted by any of the following methods: toothed or worm gearing, belts and pulleys, wire or manila rope, compressed air, electricity. State the conditions under which *each* may be most appropriate, or under which *two* may be equally competitive.

2 *a* State the heating values of carbon and hydrogen and calculate the heating value of a pound of gasoline composed of 85% carbon and 15% hydrogen.

b Calculate the number of pounds of air required to combine with this gasoline.

3 Calculate the bore and stroke of a six-cylinder automobile motor to deliver 30 brake horsepower at 1800 rpm, the ratio of stroke to bore being 1.4. Assume the mean effective pressure in the cylinder to be 90 pounds per square inch and the mechanical efficiency 85%.

4 *a* What width of single leather belt is required to deliver 10 horsepower when running on a pulley 6 inches in diameter at 1700 rpm? State the rule used.

b How does a crown hold a belt on the center of a pulley?

5 A screw press, having two screws of ½-inch pitch and exerting a pressure of 50 tons, is to be driven by an electric motor running at 1700 rpm and connected to the screws by a suitable train of gears, the successive ratios of which are not to exceed 6 to 1. The pressure head is moved at the rate of one inch per minute. The over-all efficiency is assumed to be 40%. Sketch a suitable gear train and calculate the horsepower delivered by the motor when the press is operating at 50-tons pressure.

6 Find suitable pitch and width of face for a pair of 14½° involute spur gears to transmit 8 horsepower. The velocity ratio is to be 2:3 and the distance between centers is 10 inches. The pinion is to be of mild steel and is to run at 150 rpm. The gear is to be bronze.

7 Two three-speed pulleys are to be connected by a crossed belt. The driving shaft runs at a constant speed of 200 rpm and the driven shaft at 50, 150 and 500 rpm. Calculate the diameters of the steps on both pulleys, assuming the diameter of the smallest step on the driven pulley to be 6 inches.

8 Sketch a form of mechanism producing the following types of motion: (*a*) slow advance and quick return, (*b*) rotary into straight line harmonic, (*c*) parallel straight line, (*d*) intermittent rotary from continuous rotary, (*e*) rotary rocking from continuous rotary.

9 *a* A galvanometer produces a deflection of one division on its scale when 1.8 microvolts are impressed upon it. The resistance of the instrument is 34 ohms. What deflection will the galvanometer produce when it is connected in series with a dry cell having an emf of 1.5 volts and a standard megohm resistance?

b A 30,000-ohm voltmeter is used in measuring the insulation resistance of a motor. When connected in series with the insulation across a 230-volt line, the instrument reads 1 volt. Find the value of the insulation resistance of the motor.

10 Two condensers of 2 mf. and 10 mf. capacitance are connected in parallel, and this combination is connected in series with a third condenser of 8 mf. capacitance across a 120-volt direct-current supply circuit. Find the charge of each condenser and the voltage across each. What is the total energy stored in the three condensers?

11 *a* Two storage cells connected in parallel supply jointly a current of 20

(*Continued on next page*)

amperes to an external circuit. One cell has an emf of 2.1 volts and the other an emf of 2.0 volts, and each has an internal resistance of 0.05 ohm. Find the current flowing through each cell.

b Explain why the specific gravity of the electrolyte of a lead storage cell decreases as it discharges.

12 What goes on within an electric generator to account for its requiring more mechanical power to drive it when the machine delivers more current?

13 A generator has 4 poles with faces 6 inches square and has a flux density in the air gap of 40,000 lines per square inch. The machine has 360 conductors arranged in four parallel paths through the armature. Compute the emf of the generator when driven at 1200 rpm.

14 A coil of 0.1 henry inductance and 18 ohms resistance is connected across a 220-volt, 60-cycle line. Find (*a*) the reactance of the coil, (*b*) its impedance, (*c*) the current that will flow through it, (*d*) the angle by which this current will lag behind the supply voltage.

15 A three-phase, delta-connected induction motor operating on a 440-volt line has a power factor (lagging) of 0.75 and an efficiency of 0.85. It is delivering 20 horsepower. What is the line current and the current in the motor phase windings?

16 Explain how to obtain balanced three-phase voltages from two-phase and from three-phase circuits by means of two transformers of appropriate voltages.

THE UNIVERSITY OF THE STATE OF NEW YORK

Examination for Professional Engineers

ENGINEERING ECONOMICS AND PRACTICE (Administration)

Wednesday, January 30, 1935—9.15 a. m. to 12.15 p. m., only.

Answer any eight of the following questions but no more. If more than eight questions are answered, only the first eight will be considered. Slide rule and any reference books may be used. Return these questions with your answer papers.

1-2 A newspaper company uses foundry type in making up advertisements. When the advertisements are broken up, the type must be sorted by hand. This sorting of type may be eliminated by the installation of three machines using cast type that can be melted and used again. The three machines will cost $25,000. Their use requires two operators at $55 a week each. Power and repairs will average $70 a month over the life of the machines. Salvage value of foundry type will equal cost of type metal for the new machines. Renewal cost for worn-out foundry type averages $1100 a year. The new machines will replace 6 printers at $45 a week each. The interest rate is 6% and depreciation on new machines 25% annually. Neglecting compound interest equivalence, calculate whether these machines will pay for themselves in 4 years.

3 Outline an investigation to determine whether an ice refrigerator or an electric refrigerator will prove more economical in the long run for a college fraternity house.

4 Is it proper or improper for a professional Engineer (*a*) to participate in competitive bidding against his colleagues to secure a professional engagement that is to go to the lowest bidder, (*b*) to accept an engagement to review the work of another professional Engineer without his knowledge? Give reasons for your answers.

5-6 The owner of a tract of land adjacent to a stream is contemplating irrigation of the land either by a gravity system or by a pumping-plant system. The gravity system is estimated to cost $42,000; its annual depreciation will be 1% of the first cost and its annual operating and maintenance expenses $600. The pumping-plant system is estimated to cost $18,000; it will have an annual depreciation rate of 5% and an annual operating and maintenance expense estimated at $2400. Taxes on the proposed improvement will be 1% of the first cost. Assume the service of either system to extend indefinitely into the future. The owner might invest conservatively at 6% the difference between the first cost of the two systems. Determine which system the owner should build.

7-8 An old light-capacity highway bridge may be strengthened at a cost of $9,000 or it may be replaced by a modern bridge of sufficient capacity at a cost of $55,000. The present net salvage value of the old bridge is $13,000. It is estimated that the reinforced bridge will last for 5 years, after which additional reinforcement or replacement will be necessary. The net salvage value of the reinforced bridge will be $10,000 at the end of 5 years, and that of the new bridge will be $15,000 after 30 years. The additional cost of maintenance and inspection on the old structure is $300 per year. Assuming interest at 6% and depreciation on a straight-line basis, state whether it is more economical to reinforce the bridge or to replace it.

9 What types of facts should be obtained to serve as a basis for a highway-development program that tries to secure the greatest possible return to the community on its investment in its highway transportation system?

10 *a* What should determine the rate of depreciation allowed on different items in a valuation proceeding?

b What is meant by amortization?

11 *a* What are the essential elements of a contract?

b What conditions may render a contract void?

12 Would automatic stokers be economical in a steam power plant if they did not accomplish any saving in labor? Give reasons for your answer.

THE UNIVERSITY OF THE STATE OF NEW YORK

Examination for Professional Engineers

CHEMICAL ENGINEERING

Wednesday, January 30, 1935—1.15 to 4.15 p. m., only.

Answer five of the following questions but no more. If more than five questions are answered only the first five will be considered. Slide rule and any reference books may be used. Return these questions with your answer papers.

1 A solid product is to be dried. List the properties of the product about which you would require information to enable you to decide what fuel you would use and whether the drying should be done by direct contact with the products of combustion or by indirect transfer of the heat of combustion.

2 Nitrobenzene is being distilled with steam at a temperature of 99.5° C. and an absolute pressure of 765.0 mm of mercury. The vapor pressure of water at this temperature is 746.0 mm. How many pounds of condensed water will come over per pound of nitrobenzene?

3 A fuel gas analyzes as follows: CH_4 20%, H_2 30%, CO 10%, CO_2 5%, C_2H_4 10%, N_2 25%. What is the specific gravity of this gas? [Specific gravity of air = 1]

4 State for what types of operation the following machines are specifically adapted in preference to other types of equipment available for performing the same service: (*a*) plate and frame filter press, (*b*) parallel-current rotary drier, (*c*) film-type evaporator, (*d*) perforated basket centrifuge, (*e*) ball mill.

5 Select *one* of the processes given below and give as complete a description of the process as possible within the time available. Include flow sheet, drawings, etc.

a Manufacture of sulphuric acid by the lead chamber method
b Manufacture of pig iron
c Manufacture of illuminating gas
d Manufacture of carbureted water gas
e Manufacture of sodium carbonate by the Solvay process
f Manufacture of soap
g Manufacture of cement
h Manufacture of paper (any process)
i Manufacture of a rubber article
j Manufacture of a leather article

6 Draw a material flow sheet for the products of the destructive distillation of soft coal.

7 A furnace is fired with a coal containing 68% C, 4% H_2O, 5% ash and negligible nitrogen and sulphur. The flue gas analyzes CO_2 10%, CO 2%, O_2 5%, N_2 83%. The gas goes to the stack at 640° F. Calculate (*a*) percentage of air excess, (*b*) number of cubic feet of flue gas per pound of coal.

8 Draw the flow sheet for an alkali-chlorin plant producing fused caustic, liquid chlorin and bleaching powder from crushed rock salt. Designate the quantity of *each* product expected to be produced from one ton of salt.

9 Tank storage is to be provided for the following chemicals and solutions at approximately grade level in unit quantities of 5000 barrels: (*a*) concentrated nitric acid, (*b*) 15% sodium-chlorid solution, (*c*) benzol, (*d*) 50% caustic-soda solution, (*e*) 90% mixed acid. Specify the material and type of construction for each tank.

10 Define the following as applied to cells for the decomposition of sodium chlorid: (*a*) decomposition efficiency, (*b*) ampere efficiency, (*c*) decomposition voltage, (*d*) energy efficiency. How are *each* of these values obtained?

THE UNIVERSITY OF THE STATE OF NEW YORK

Examination for Professional Engineers

CIVIL ENGINEERING

Wednesday, January 30, 1935—1.15 to 4.15 p. m., only.

Answer any eight of the following questions but no more. If more than eight questions are answered, only the first eight will be considered. Slide rule and any reference books may be used. Return these questions with your answer papers.

1 Explain how to calculate (*a*) the yield of a watershed for power or water supply purposes, (*b*) the necessary storage capacity to provide a given rate of delivery.

2 Explain how to design a concrete pavement slab for length, width and

thickness, using suitable loading and impact. What is the significance of thickened edges? What reinforcement for slab and pavement would you recommend, if any, and why?

3 A bulkhead wall has been completed some distance out from the shore line. Indicate how the intervening area of muddy bottom should be filled in. Illustrate by sketch and state reasons for the method adopted.

4 Describe the activated sludge process of sewage treatment. Include a statement of the principal biologic phenomena that occur.

5 By diagram and explanation, show the profile of a "hump" of a gravity freight yard, giving the lengths and rates of the grades used.

6 By diagram and explanation, show the cross section and construction of a bituminous-macadam (penetration method) road, giving the amounts and required quantities of the materials used.

7 Write a clause in a set of specifications for "Earth Excavation" and "Rock Excavation" so that there will be a minimum of disputes between the engineer and the contractor as to the classification of materials for payment.

8 A contract for the construction of a vitrified pipe sewer includes a general or "blanket" clause that the contractor shall "perform all work and supply all materials for the completion of the work as shown by the plans." In opening the trench for this sewer, ground water is encountered. The contractor has considerable difficulty in laying the pipe and making the joints and appeals to the engineer for advice. The engineer suggests that the contractor excavate the trench 6 inches deeper than would otherwise be necessary and that he fill the trench bottom with 6 inches of steam cinders. Later, the contractor claims an "extra" for this work. Should this "extra" be allowed? Give reasons.

9 Describe a method for erecting a 6-panel Pratt truss of 120-foot span across a gorge 90 feet deep.

10 Discuss (*a*) the importance of leakage and waste in a water-supply distributing system, (*b*) the most satisfactory methods to reduce such water loss, (*c*) the effectiveness of these methods or the percentage of waste reduction that may be realized from them.

11 Discuss the importance of provision for adequate drainage for a first-class highway. Describe the common methods of taking care of run-off from within the right of way.

12 A canal lock is built through a rock cut. Is it necessary to provide lock walls of full gravity section? Explain the design by sketches.

THE UNIVERSITY OF THE STATE OF NEW YORK

Examination for Professional Engineers

ELECTRICAL ENGINEERING

Wednesday, January 30, 1935—1.15 to 4.15 p. m., only.

Answer any five of the following questions but no more. If more than five questions are answered, only the first five will be considered. Slide rule and any reference books may be used. Return these questions with your answer papers.

1 In a certain Wheatstone bridge, the ratio arms are of 10 ohms each and the other two arms have resistances of 10 ohms and 30 ohms. The resistance of the galvanometer is 100 ohms. If the battery voltage is 10 volts, how much current will flow through the galvanometer?

2 A three-phase, 208-volt line has its terminals marked *a*, *b* and *c*. To these terminals is connected a balanced wye (*Y*) load of three 10-ohm resistances. Between terminals *a* and *b* an additional impedance $(5 + j10)$ is connected. Between terminals *a* and *c* an additional impedance $(5—j5)$ is connected. Calculate the line current in the three lines *a*, *b* and *c*.

3 A certain radio-frequency generator, having a generated voltage of 10 volts and an internal resistance of 100 ohms, is connected through an air-core transformer to a resistance load of 200 ohms. The impedance of the primary and secondary windings of the transformer are $50+j300$ and $100+j600$ ohms, respectively. The mutual reactance is 80 ohms. Calculate the current through the 200-ohm load.

4 A certain 2200/220 volt, 25-kva transformer draws 600 watts at no load. With the secondary short-circuited, the primary draws 500 watts with the rated current flowing through it. Calculate the efficiency of this transformer at full load and 90% power factor. Neglect the magnetizing current.

5 A 15-horsepower, 1200-rpm, 220-volt, direct-current shunt motor has armature and field resistances of 0.25 ohm and 100 ohms, respectively. The full-load efficiency is 87%. What should be the value of the starting resistance in order that the armature starting current will be 200% of the full-load value.

6 The machine described in question 5 draws 4.2 amperes at no load. The armature reaction is such as to reduce the field from no load to full load by 10%. What is the speed regulation of this motor?

7 Explain in detail how the starting torque of a 5-horsepower, three-phase induction motor may be measured.

8 *a* Name and describe in some detail *three* commercial methods of starting single-phase induction motors.
b To how large a rating are single-phase induction motors available?
c How would you reverse the direction of rotation of a repulsion-starting single-phase induction motor?
d How does the universal motor differ from a direct-current series motor?

9 Sketch a family of three curves for a 3-element vacuum tube. Explain how the plate resistance, the amplification factor and the mutual conductance may be calculated from such curves.

10 A large arc light is to be used to illuminate the runway of a flying field. Specify the electrical equipment for such an installation, assuming that power is available at 440 volts and 60 cycles.

THE UNIVERSITY OF THE STATE OF NEW YORK

Examination for Professional Engineers

MECHANICAL ENGINEERING

Wednesday, January 30, 1935—1.15 to 4.15 p. m., only.

Answer any five of the following questions but no more. If more than five questions are answered, only the first five will be considered. Slide rule and any reference books may be used. Return these questions with your answer papers.

1 An air-conditioning system delivers to the space to be conditioned 20,000 cubic feet of air per minute at 65° D. B. and 40% relative humidity. Of this air 75% is being recirculated. Determine the refrigeration effect, in tons, required, when outside air has 90° D. B. and 77° W. B., the return air has 75° D. B. and relative humidity of 34% and the total 20,000 cubic feet per minute passes through a saturating air washer. Assume 13.6 cubic feet of air per pound.

2 A short cold rolled steel shaft turning at 250 rpm is to transmit 20 horsepower. The power is received by a 24-inch gear located midway between shaft bearings 48 inches apart. The shaft drives through a pinion located close outside one of the bearings. State the design problem involved and determine the shaft size required, indicating the safe stress used.

3 Distinguish between the terms *time study* and *motion study*. Describe a practical application of each in examples preferably from your own experience.

4 A centrifugal pump located 10 feet above a river discharges 1,000 gallons per minute against a pressure of 100 pounds per square inch. Assuming an over-all pump and motor efficiency of 50%, calculate the kw hours per 24-hour day required to operate the pump.

5 What is meant by *preventive maintenance?* Outline briefly a procedure of operation for such a maintenance program in a particular industrial plant of your choice.

6 Heat-transfer equipment with a variable steam load up to 20,000 pounds per hour requires 200 equivalent feet of pipe-line connection to a source of steam supply at 125 pounds per square inch gauge pressure. The maximum safe working steam pressure in the equipment is 25 pounds per square inch gauge pressure. Determine the size of pipe for the connecting line, and make a rough sketch showing the arrangement of the essential valves in this line.

7 Describe the preparation of a sand mold for the pouring of a simple cast-iron pulley 12 inches in diameter, 3-inch face, with a cored hub and four arms.

8 Calculate the heat loss in Btu per square foot per hour through a wall construction of 8-inch cinder block with 2 inches of cork and ½ inch of plaster on one side, and ½ inch of plaster on the other side. Assume still air on both sides having a temperature difference of 40° F.

9 Exhaust steam at 1 pound per square inch gauge pressure and containing 12% moisture is fed into an open-type feed-water heater. How many pounds of this steam are required to raise the temperature of 1,000 pounds of feed water from 60° to 200° F.? The barometric pressure is 30 inches of mercury.

10 A flywheel weighing 8,960 pounds has a mean radius of gyration of 60 inches and turns at 100 rpm. How much energy is delivered with a reduction in rotational speed of 5%?

SEE NOTE ON NEXT PAGE

Copies of The American Engineer may be obtained at list price by addressing the Business Manager of The American Engineer or by calling at room 2952, Grand Central Terminal, N. Y. C.

WHAT PROMPTS?

(*Continued from page* 12)

statement. In the twenty-eight States already having Engineers' registration laws, the standard set by the State licensing authority is the only standard that counts; it is the standard that must be met before admission to professional practice; it is the only standard that has the force and sanction of law. In a number of the States, the registration boards acting jointly with the State Societies of Professional Engineers have taken an important position of professional leadership and have been a potent force in raising the standards and standing of the profession through improvement and enforcement of the registration laws. The improved educational requirements thus written into the laws of New York and other States, and thereupon into the Model Registration Law, were used as the foundation for the standard subsequently adopted by the Engineers' Council for Professional Development. In order to correct the erroneous impression produced by your present phrasing, I would therefore suggest that you revise the sentence near the bottom of page 24 to read: "Moreover, even though the state registration or licensing boards set the only standard having legal force and sanction, it is a matter . . . ."

A correction needs to be made in line 2 on page 25. The phrase "those set by the schools for the graduation of their students" should read "those set by the schools for the conferring of professional degrees upon their graduates."

Your cooperation in making these recommended revisions or amplifications will be sincerely appreciated.

Faithfully yours,
D. B. Steinman.

Comment:—Perhaps the firm but courteous letter of Dr. Steinman is to be commended. However, one is justified in condemning statements which disregard truth and indicate disrespect for law. Surely the author of "Moreover, even though the state registration or licensing boards are of relatively little importance" is inviting official attention from the authorities in a state such as New York.

ENGINEERS' PLIGHT

(*Continued from page* 12)

out. I will be deeply gratified for any advice or suggestions that you may see fit to offer.

Respectfully yours."

Engineers are invited to address the American Engineer upon this topic.

A PRESIDENTIAL APPEAL

(*Continued from page* 12)

send out for you any communications you wish to send to the members of your committees. We have already received several letters from members of committees asking what special duties they can perform and offering to cooperate in any way. All of this latent energy and enthusiasm should be mobilized. You may wish to subdivide your committee programs by organizing sub-committees to handle individual items of activity.

Please let me know what activities you select for intensive immediate development. If you will re-read the instructions which I sent out a few months ago headed "To Chairmen of Committees," you will note that a monthly report is expected from you, covering the activities and accomplishments of your committee. Such monthly report will be very helpful to me and will also be useful for publication in The American Engineer.

Please remember that the Society will continue to grow only in proportion to its effective accomplishments. I am counting on you, and shall look forward to hearing from you along the lines indicated.

Faithfully yours,
D. B. Steinman,
President.

VENI-VIDI-VICI

(*Continued from page* 6)

February 9, 1935.

Diary of D. B. Steinman (continued)

Sun., Feb. 3—Resting, at Louisville, Ky.

Mon., Feb. 4—At Louisville, Ky.—Joined by Perry T. Ford—Conference with local committee.

Tues., Feb. 5—At request of Dean B. M. Brigman, addressed the engineering students and faculty of the University of Louisville, in the forenoon.

In afternoon, attended first annual meeting of the Kentucky Society of Professional Engineers. Addresses by Perry T. Ford and D. B. Steinman. Committees appointed to prepare resolutions and by-law amendment for affiliation with National Society of Professional Engineers—Key men: Dean Brigman, Prof. W. B. Wendt, Prof. Terrell (of University of Kentucky), Pres. J. S. Watkins, etc. All of splendid type. In evening Convention Dinner of Kentucky Society of Professional Engineers—Address by D. B. Steinman—Resolutions and amendment for affiliation with National Society of Professional Engineers passed unanimously.—J. S. Watkins, re-elected President of Kentucky Society.—Prof. Terrell elected Director of National Society of Professional Engineers.

Wed., Feb. 6—Arrived at Des Moines—Met Profs. Fuller, Dodds, Caughey, Ayres, Kerekes, etc., of Ames, and Dean C. C. Williams.—Attended meeting of Iowa Section, American Society of Civil Engineers.

Thurs., Feb. 7—A. M., attended meeting (technical) of Structural Section of Iowa Engineering Society and participated in discussions. P. M., General Session from Iowa Engineering Society. Address by D. B. Steinman "Why Iowa Engineers Should Affiliate with the National Society of Professional Engineers," followed by prepared address from manuscript (with lantern slides of organization charts) by Prof. Huber O. Croft of State University of Iowa on "The Engineer and his Societies," in opposition to the National Society of Professional Engineers.—Open discussion followed, pro and con.

Evening—Annual Banquet of Iowa Engineering Society.—Address by D. B. Steinman on "Problems of the Engineering Profession" followed by address of Governor Herring of Iowa.

Thursday sessions were attended by men from other states interested in the National Society of Professional Engineers, including E. K. Mather of South Dakota and H. L. Cory of Nebraska, both on Membership Committee of National Society of Professional Engineers.

Fri., Feb. 8—A. M.—Business Session of Iowa Engineering Society.—Reports of Committee on Legislation, Public Relations, and Professional Ethics.—Pres. C. C. Moriarty, presiding.—Further discussion on affiliation with National Society of Professional Engineers. Motion made by C. H. Currie and passed to submit the question of affiliation with National Society of Professional Engineers to the membership by letter-ballot for decision within three months.—Geo. Keller elected President.

P. M.—Attended technical sessions of Iowa Engineering Society.

Mon., Feb. 11—D. B. Steinman addressed Toledo Section, A.S.C.E., at special dinner meeting on "Application of Aluminum in Bridge Construction" (subject selected by officers without consulting D. B. S.), also on "Threatened Government Socialization of the Engineering Profession."

Tues., Feb. 12—Attended 56th annual meeting of the Ohio Engineering Society at Columbus.—Attendance 500.—Address by D. B. Steinman on "The National Society of Professional Engineers."—Discussion by Perry Ford.—Motion passed unanimously to appoint committee to confer with D. B. Steinman to work out plan for affiliation.

Evening—Conference with committees on standardization of practice and fees.

Wed., Feb. 13—Conferences with committee (including State Board of Registration) on affiliation with National Society.—Prepared resolutions for affiliation and necessary constitutional amendments.—All agree to change name of Ohio Engineering Society to Ohio Society of Professional Engineers.—Local chapters of professional engineers already organized in 42 counties and Perry Ford busy getting others started.

Evening—Second Annual Banquet celebrating the passage of the Engineers and Surveyors Registration Law in Ohio.—Six hundred Engineers in attendance—Many members of State Legislature present as guests.—An inspiring turnout of Engineers organized.—Perry Ford announced Chapter organizations now started in 86 counties out of 88 in Ohio.—Address by Governor of Ohio.

Thurs., Feb. 14.—A. M.—Business session of Ohio Engineering Society.—Resolution presented by Perry Ford to join National Society of Professional Engineers carried unanimously.—Amendment to change name of Ohio Engineering Society to Ohio Society of Professional Engineers carried unanimously.—Amend-

ment to restrict full membership to registered Professional Engineers and Registered Surveyors carried unanimously.—Amendment increasing dues carried unanimously.

Noon.—D. B. Steinman guest at Luncheon of Central Ohio Section, A. S. C. E.—Address by D. B. Steinman on "Relations of the National Society of Professional Engineers to the American Society of Civil Engineers."

P. M.—D. B. Steinman left for New York, completing 22-days itinerary of conventions and meetings of state societies and local organizations.—Results: Number of member State Societies in National Society of Professional Engineers increased from 6 to 9.—Widened interest and enthusiasm.—Over 1000 members added to N. S. P. E.

ENGINEERS and CITIZENSHIP

(*Continued from page* 9)

the bidding of the capitalist. In public employment, that of the politician. He has felt no responsibility for the laborers who have been thrown out of employment by the labor-saving devices he has perfected. He has sounded no warning as to the economic soundness of plant and factory expansions which he has designed and built. In short, he has been so engrossed in his work (when he had work) that he did not look beyond or think beyond its technical or administrative details.

Engineering training and experience should furnish an excellent foundation for something that is much more urgently needed today than any immediate advancement in technical knowledge, *i. e.*, sound leadership. The same sound, honest and practical thinking that is essential to good engineering is essential to good leadership. The same standard of honesty that is expected of Engineers, and, one is proud to say, is characteristic of Engineers, would indeed be becoming to our public leaders.

As to the present status of the Engineer, that is wholly a question of relativity. By what yardstick do we measure the standing of an Engineer? Not by the yardstick of ability to accumulate a fortune, I hope. If so, we are all failures. Perhaps we should not set our sights too high. Some years ago in Cedar Rapids the writer met a boyhood friend whom he had not seen for many years. The friend was neatly dressed and looked reasonably prosperous. In reply to the inquiry as to how things were going, he replied, "Fine. You know, I didn't seem to be getting anywhere out in Carroll County where we used to live, so I came down here, got me a job, and have made good." "Glad to hear it," said the writer. "What are you doing?" "Tending bar at the Montrose," he replied with a pardonable note of pride in his voice.

If we are willing to consider that an Engineer's sphere of usefulness should be limited to efficiently and honestly carrying out assignments given him by others, it is probable that the Engineer has made some progress in these last few distressful years. He has proven himself capable and dependable in connection with all manner of relief work. He is more and more being called upon to head up re-employment agencies and to take charge of the spending of relief funds. He is being given more responsibility in developing and approving work relief projects. He is doing a good job of keeping free from charges of graft and politics in the carrying out of his assignments. But he is carrying out, rather than giving out, assignments. Union labor leaders and professional politicians with an occasional Professor of Political Economy or Sociology thrown in for good measure, are formulating the policies and giving out the assignments.

As to public recognition, we get about what we deserve. Under our present system of popular government, man seeks the office, rather than the office seeking the man. Do you recall many instances of a capable Engineer offering himself as a candidate for any important state office or national office? Or do you recall any instance, except in New York and a few other instances, when Engineers as a group have interested themselves in matters of general legislation, aside from relatively minor matters primarily affecting Engineers? If Engineers are capable of constructive thinking or constructive leadership along any other than their own technical lines, they have yet to prove it. And Mr. Diogenes, the Politician, is carrying his lantern about looking for votes—not for rival candidates.

With reference to Professional Advancement, satisfactory progress, technically, is being made. Each year we are carrying out the assignments given us, in a better manner. We are developing better water supplies, building better roads and bridges, administering our county and city engineers' offices in a more efficient manner. We are giving the public more value for their investments in public improvements than they have ever before received. We are, likewise, constantly improving the quality and effectiveness of the service rendered to private employers.

From the standpoint of advancement in professional standing, however, one doubts whether much progress can honestly be recorded. Most contribute somewhat grudgingly to the financial support of the professional societies to which we belong. Many of our capable Engineers do not even belong to any technical or professional societies. We contribute even more grudgingly, if at all, of our talents or efforts in behalf of our profession. Those of us fortunate enough to remain continuously employed during the past few years have only faintly sensed the efforts made by officers of our state and national societies, in behalf of our less fortunate, unemployed brethren. Had each of us been willing to contribute to the cause of unemployed Engineers but a small portion of the time and money we spent on our private pleasures, the efforts of our society officers would doubtless have been many times more effective. We have all too little pride in our profession—too little concern for the welfare of our fellow engineers. Why that should be is hard to understand. Why the members of a profession that designed and built, or supervised the building of, the Panama Canal, the Holland Tunnel, the Boulder Dam, the George Washington Bridge and the myriad other engineering marvels of our modern civilization, should evidence less interest and pride in their profession than is evidenced by the members of a hod-carriers' union in the hod-carrying profession, will probably always remain one of our trade secrets.

NAT'L SOCIETY DIRECTORS

(*Continued from page* 11)

Reports indicate that there is a wide range in the constitutions under which the state societies conduct their affairs, thus making it difficult to co-ordinate activities.

The Membership Committee was instructed to prepare a Model Constitution for all state societies with a view of harmonizing the requirements and aims of the member state bodies. Such instrument is merely intended as a guide and is not compulsory upon any Society.

A special Committee on Endowments was appointed with Col. Hugh Kelly of New Jersey as Chairman, and Major Thos. Battin of Pennsylvania as Secretary.

The Board authorized the announcement of the establishment of National Headquarters at Washington, D. C.

April 15th to June 1st is the period during which quarters will be furnished and set up and the probable location will be the National Press Building. The definite date and location will be announced in the April issue of the American Engineer. At the same time the National Council of State Boards of Engineering Examiners will also open headquarters at the same location. Co-operation between the National Society and the National Council has been agreed upon. T. Keith Legaré, who is Secretary of both organizations, has been authorized to complete the arrangements.

In keeping with the spirit of the resolution passed last fall by the National Council, the Board passed a similar resolution pledging full cooperation and support of the National Society to the National Council.

The question of an emblem was discussed at length and the Board authorized Mr. Raphael J. Smyth to make a report and recommendation. Blue and gold were selected for the color scheme and opinions as to form and expression are to be forwarded to Mr. Smyth.

STATUS OF ENGINEERING

(*Continued from page* 7)

time like the present when the opportunities for service are greater than ever before should we not be mindful of the fact that each opportunity for the engineer is acompanied by definite obligations to his employer, the profession, society as a whole, and himself?

To his employer he is obligated to render service only as a faithful, trustworthy agent or trustee.

To his profession he is obligated to so conduct his business and social affairs as to reflect credit to the profession. He must ever be mindful that his profession has given him an educational background, literature and tradition; achievement beyond the dreams of his forefathers, and a future filled with opportunity and responsibility.

To society he is obligated to maintain an active interest in the social, educational, political and economic life of the community of which he is a part never forgetting that the public is always willing to accept him at his own estimate of himself.

To himself he is obligated to know himself. Disraeli once said, "A man can know nothing of mankind without knowing something of himself. Self-knowledge is the property of that man whose passions have their full play, but who ponders over their results."

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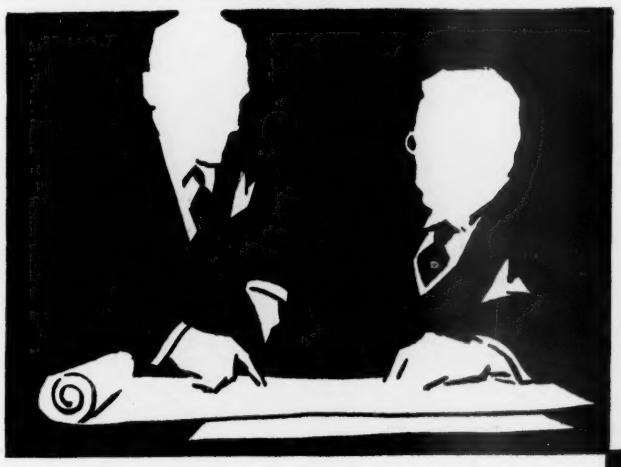

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